THE JOURNAL OF

MEDICAL EDUCATION

OFFICIAL PUBLICATION OF
THE ASSOCIATION OF AMERICAN MEDICAL COLLEGES

AUGUST 1957 • VOLUME 32 • NUMBER 8

Medical Teaching in Italian Universities.....*Eugenio Bonetti*

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The University and Medicine.....*Lester J. Evans*

Integration of the Last Year of College and the First Year of Medicine.....*George A. Wolf, Jr.*

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Table of Contents

VOL. 32 AUGUST 1957 No. 8

WITH OUR AUTHORS V

ARTICLES

Organization of Medical Teaching in Italian Universities
—*Eugenio Bonetti* 547

The Significance of the 1956 Institute on the Evaluation of the Student from a Dean's Standpoint
—*John McK. Mitchell* 552

Career Interests and Expectations of U.S. Medical Students
—*Don Cahalan, Patricia Collette, and Norman Hilmar* 557

The University and Medicine
—*Lester J. Evans* 564

Integration of the Last Year of College and the First Year of Medical School
—*George A. Wolf Jr.* 573

The Teaching of Comprehensive Medicine at Temple University School of Medicine and Hospital
—*William A. Steiger and A. Victor Hansen* 580

EDITORIALS 586

NEWS AND COLLEGE BRIEFS 590

AUDIO-VISUAL NEWS 594

BOOK REVIEWS 597

PERSONNEL EXCHANGE 600

The Journal of
MEDICAL EDUCATION

Official publication of the Association of American Medical Colleges, 2530 Ridge Ave., Evanston, Ill.

The Journal of MEDICAL EDUCATION is owned and published monthly by the Association of American Medical Colleges, 2530 Ridge Avenue, Evanston, Illinois; Phone DAvis 8-9505. Entered as second class matter January 17, 1930, at the Post Office, Chicago, Ill., under the Act of March 3, 1879.

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With Our Authors

Eugenio Bonetti

Organization of Medical Teaching in Italian Universities. Dr. Bonetti is associated with the Instituto di Patologia Generale, Universita di Messina, Italy.

John McK. Mitchell

The Significance of the 1956 Institute from a Dean's Standpoint. Dr. Mitchell is dean of the University of Pennsylvania School of Medicine. He is a member of the Executive Council of the Association, for the second time. This article was presented as an address at the 67th Annual Meeting of the Association, November 12-14, 1956, Colorado Springs, Colo.

Lester J. Evans

The University and Medicine. Dr. Evans is executive associate of The Commonwealth Fund. This article was adapted from a speech given at a Seminar on Medicine, at the inauguration of Chancellor Edward H. Litchfield, University of Pittsburgh, May 10, 1957.

Cahalan, Collette, Hilmar

Career Interests and Expectations of U. S. Medical Students. Now with W. R. Simmons and Associates, New York, Mr. Don Cahalan was formerly a study director on the staff of the National Opinion Research Center, University of Chicago at the time the study reported on here was made. Prior to that, he was Chief of Troop Attitude Research for the U. S. Army in Europe, and director of the Opinion Research Center at the University of Denver. He has an M.A. from the State U. of Iowa.

Miss Patricia Collete, a study director of the National Opinion Research Center, has been a participant since 1952 in the Hunterdon County Chronic Illness Study, sponsored by the Commission on Chronic Illness, and is now engaged in a study of preventive dental practice for the American College of Dentists. She has an M.A. from the University of Chicago.

Capt. Norman A. Hilmar, Medical Service Corps, U. S. Army, is a social psychologist currently assigned to the Office of the Surgeon General, Department of the Army, Washington, D. C. He received his Ph.D. from Cornell University in 1955.

George A. Wolf Jr.

Integration of the Last Year of College and the First Year of Medical School. Dr. Wolf is dean of the University of Vermont College of Medicine. This paper was presented at the 67th Annual Meeting of the Association of American Medical Colleges, November 12-14, 1956, Colorado Springs, Colo.

Steiger, Hansen

The Teaching of Comprehensive Medicine at Temple University School of Medicine and Hospital. The authors are the coinstigators of the comprehensive medical program at Temple. Dr. William A. Steiger, an internist, is an assistant professor of medicine, and received his M.D. at the University of Pennsylvania. He is director of the Comprehensive Medical Program and Director of the Medical Clinic.

Dr. A. Victor Hansen, a psychoanalyst, is an associate professor of psychiatry who received his M.D. at Temple. He was formerly clinical director of the Psychiatric Clinic.

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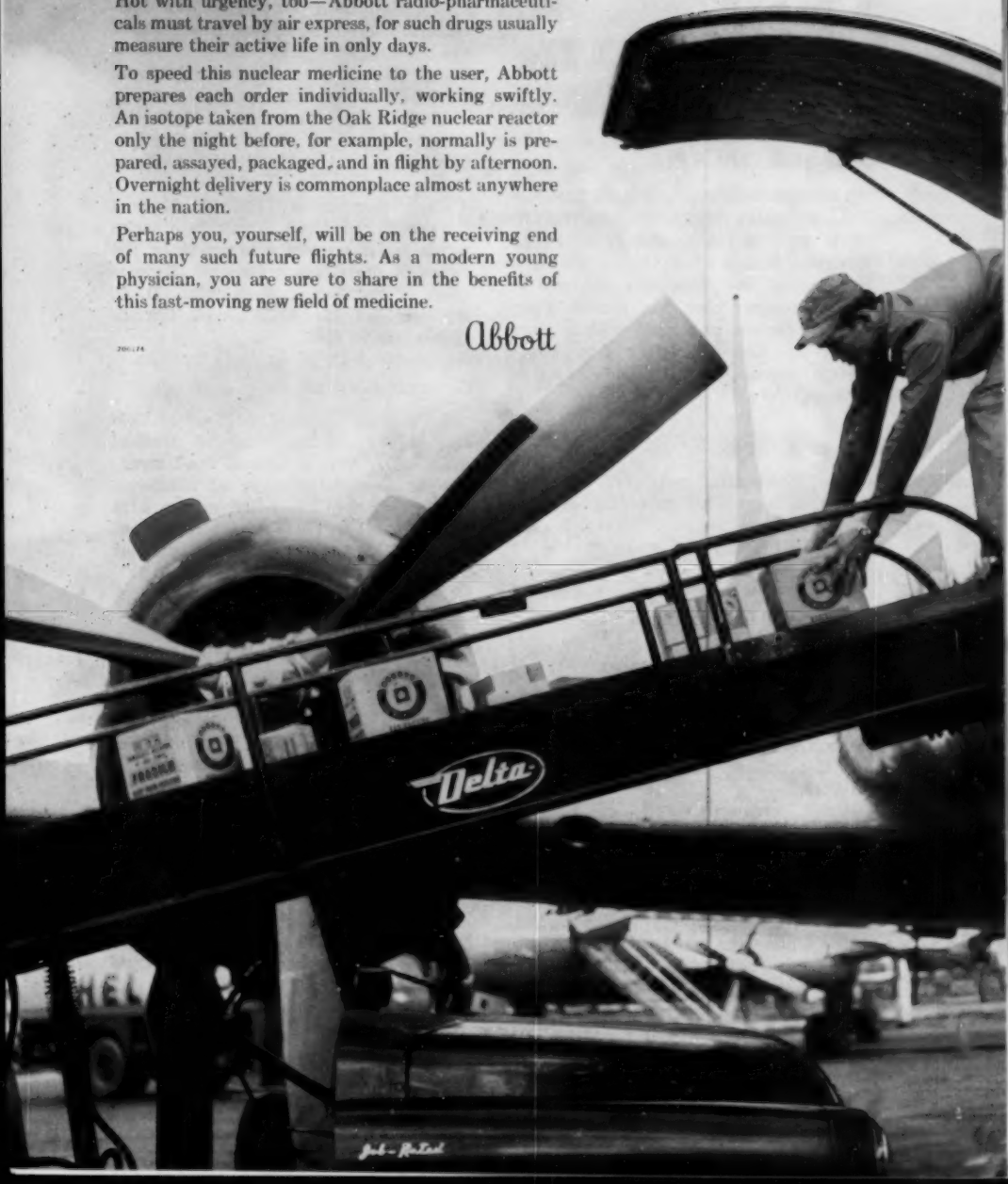

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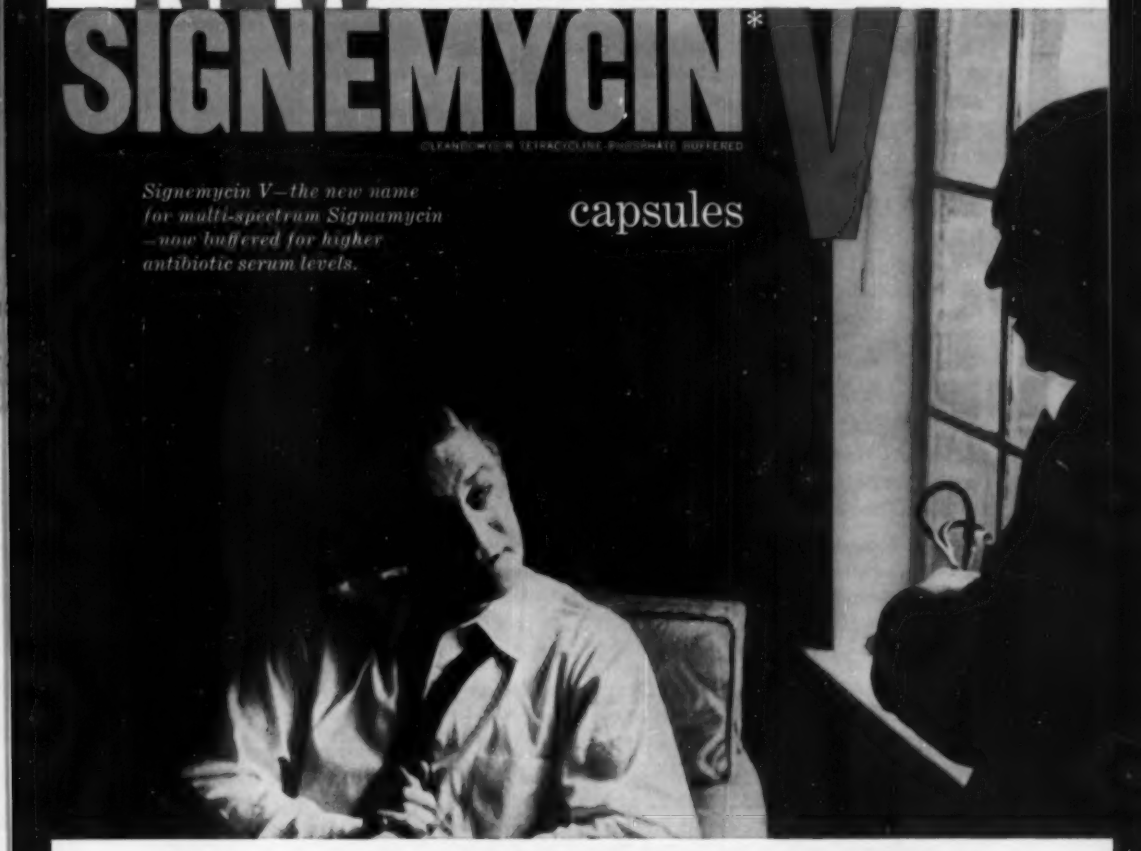

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Index to Advertisers

Abbott Laboratories	VI
Appleton-Century-Crofts, Inc.	III
Ayerst Laboratories	XV
Blakiston Div., McGraw-Hill Book Co.	Inside Front Cover
Burroughs-Wellcome & Co.	IV, VII
Eaton Laboratories	XI
Lakeside Laboratories	XVI
J. B. Lippincott Co.	XIV
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*The American Foundation: Medical Research: A Midcentury Survey, Boston, Little, Brown and Company, 1955, vol. 1, p. XXXI.

**_Ibid._, p. 600.

Organization of Medical Teaching in Italian Universities

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Supply and selection of medical students

THE SUPPLY and selection of medical students is through one of the examinations of "maturitá classica" or "maturitá scientifica." These examinations end the five year period spent by the young student in secondary schools either in *ginnasio* and *liceo classico* or in the *liceo scientifico* after elementary schools and *scuola media*. They do not constitute a special medical entrance examination but they are meant to be a general judgment of the mental and cultural maturity of the student leaving secondary school which entitle him to register in the university and allow him to choose any of the faculties including that of medicine.

No limitation whatsoever exists to the number of students who can enter the medical faculties once they have taken one of these examinations. This fact implies overcrowding of the medical schools which may bring inadequacy of teaching facilities and of the number of academic staff in relation to the number of students. The introduction of some more specific and efficient means of selection and the *numerus clausus* is advocated by many responsible people.

Curriculum of medical students

Italian universities are state universities; the curriculum of the faculty of medicine is the same for all of them and comprises *fundamental* and *subsidiary* subjects. The course lasts six years and is divided into biennial periods.

Division into biennial periods exerts a control on the course of studies and prevent students who have not taken the examinations relevant to one biennial period from going into the next academic year. However the selection which might be obtained by this two yearly control is rendered less efficacious by the fact that there is no limit to the number of times a student can take any one examination.

The fundamental subjects taught in the three biennial periods and the relative exams are in Table I.

Furthermore the students must be examined in three subsidiary subjects which may be chosen among those taught in his faculty. The following is a shortened list of these subjects: histology, history of medicine, occupational medicine, orthopedics, parasitology, psychology, science of nutrition, surgical anatomy, tropical and infectious diseases etc.

TABLE I

First period	1st year	General Biology, Chemistry, Physics;
	2nd year	Normal Anatomy, Biochemistry, Microbiology;
Second period	3rd year	Physiology, General Pathology;
	4th year	Medical Pathology, Surgical Pathology, Pharmacology, Ear, Nose and Throat Diseases.
Third period	5th year	Morbid Anatomy, Mental and Nervous Diseases, Eye Clinic, Dermatology, Dental Clinic, Hygiene, Radiology;
	6th year	Medicine, Surgery, Obstetrics and Gynecology, Pediatrics, Forensic Medicine.

Lectures and demonstrations for some subjects last two years (normal anatomy, physiology, general pathology, morbid anatomy, medical pathology, surgical pathology); the course of lectures in subsidiary subjects and in some minor clinical subjects, even fundamental ones, may only last two terms. All lectures are given by professors, heads of departments; practical classes and demonstrations are given by assistants who can substitute for the professor giving lectures in case of need. Professors are all medically qualified and belong to the faculty of medicine except for the subjects taught in the first year (chemistry, physics, general biology) when the teachers belong to the faculty of sciences.

Teaching takes place in the departments of the various subjects whether they be clinical or preclinical. Clinical departments may be housed in hospitals, and special agreements and by-laws regulate the needs of these departments for teaching and research with those of the hospitals for the admittance and assistance of the sick. More often university clinical departments are part of large units built especially for medical faculties *(Policlinici)*. It should be kept in mind that the academic staff and technicians of those departments depend upon the university which is responsible for all financial matters and provides the funds for their keeping. As far as the scientific and teaching activities are concerned each department is autonomous or is responsible only to the faculty of medicine of the university.

The student attends lectures, practical classes and demonstrations in preclinical and clinical subjects. A small percentage of students, about five per cent, are admitted as interns in each department where they can attend practical work or receive clinical training with closer contact and under the direct supervision of the staff. Interns apply for admission in various departments according to their own tendency. They are selected on the basis of an interview and of the marks obtained during previous academic years. Their stay in the various departments is conditioned by the diligence and interest of the students in the chosen subject.

Degrees

After six years spent at the university the title of doctor in medicine is conferred on the candidate who has passed the final examination consisting of a written thesis and two oral small dissertations. The subject of the thesis may be chosen from any one of the fundamental or subsidiary subjects taught in the faculty. After the degree six months should be spent

in the wards of the departments of medicine, surgery and obstetrics and gynecology of the university or in the corresponding wards of the main hospitals. After this compulsory period, the new doctor may take the State examination[1] which enables him to practice medicine. The degree in medicine without the state examination is merely an academic title which has no value from the professional point of view.

Differences among the medical faculties

Differences between the various medical schools do not therefore consist in the curriculum or in the distribution of examinations and subjects in the various years but in the composition of the medical faculties in the various universities.

As already mentioned, in each faculty besides the fundamental subjects a certain number of subsidiary subjects are taught which may vary from university to university. Therefore according to the university which he attends the student has a different range of subjects to chose from; but this is really a minor difference.

The composition of the medical faculty on the other hand is of more importance. In many universities the number of chairs is less than the number of subjects taught. As a result all the subjects even if they are included in the fundamental ones of the curriculum do not always have a chair and are taught by a "professor in charge" of the subject, who has not the status of a university professor and whose appointment is renewed every year by the faculty council. The "professor in charge" has a docentship[2] in that discipline, he may be an assistant in the same or another university where he is following the university career or is a university professor in an allied subject.

Of course faculties try to devote the chairs at their disposition to the most important subjects in the teaching of medicine. On the other hand a faculty owing to certain teaching traditions or for some particular local reasons may devote some of the available chairs to subsidiary subjects. This means that the academic body of the medical faculty may vary from university to university. The medical faculties of the more important universities are the ones which have the largest number of chairs devoted to a great number of fundamental subjects and to many of the subsidiary ones.

Besides when a professor has obtained a chair in one of the more important universities which are much sought after, he is unlikely to apply for a professorship in another university. This confers a higher stability to the composition of the academic body in the major universities. On the contrary in the smaller ones the composition of the academic body is very changeable owing to frequent vacancies which are filled up by competitive examinations.

Appointments of academic staff

The faculty council has complete autonomy in deciding all the problems which concern the faculty. There are three ways in which a faculty can fill up a vacancy: com-

1 The state examination was suspended during the war and has still to be resumed.

2. Docentship is equivalent to the Italian "libera docenza," an academic title which is conferred after scientific and teaching activity carried out in the university, and which allows one to give university lectures.

petitive examination for the vacant chair; transfer from another university; calling one of the successful candidates of a previous competitive examination.

One always becomes a professor through a national competitive examination *(concorso)* advertised by the Ministry of Public Instruction on request of a faculty. A commission of five members is elected by all the professors of the medical faculties. The five professors who obtain the largest number of votes make up the commission who select three candidates for professorship on the basis of their publications and teaching records. The first one is appointed to the available chair in the faculty which asked for the competition, whilst the second and third may be appointed within two years to vacant chairs in other universities. For the first three years the appointment is temporary *(Professore straordinario)* and after further judgment of his teaching and scientific activity the appointment becomes permanent *(Professore ordinario)*.

Professors depend from the Ministry of Public Instruction; they do not swear allegiance to the State as all other civil servants are compelled to do. Salaries and pensions are comparable to those of other civil servants with the difference that although the civil servant job is a full time one, the university professor may have private patients. This fact gives rise to a disparity in earning between professors of subjects which lend themselves to professional activities and those of biological and preclinical subjects.

In each department there are a certain number of assistants who are also appointed through written and oral competitive examinations and are also dependent from the Ministry of Public Instruction. There is not a definite relationship between the number of assistants and that of the students; a ratio of one assistant to 40 students is very seldom found even for subjects of basic importance in medical teaching.

Honorary assistants whose duties are the same as those of assistants on the permanent staff also work in the various departments of the faculty of medicine. They are unpaid and are at the start of their career and in order to provide for their own needs they build up a private practice in the same way as assistants on the permanent staff do to add to their salaries. Thus positions in the departments of clinical subjects are more sought after than the purely biological or scientific ones.

After some years of research and teaching in practical classes and demonstrations an assistant may take the "docentship" by submitting his publications to a commission of professors together with some practical examination on his subject and demonstrating his teaching ability by giving a lecture suitable for university students.

Medical schools and the university

From what has been said so far, it may be seen that the medical schools form one with the faculty of medicine and therefore with the university. Medical teaching has always been one of the fundamental teachings of the universities from the time of their foundation. Professors of the faculty of medicine are appointed and have the same status as professors of the other faculties. They participate in the election of the Chancellor of the University who may himself be a professor of the medical faculty; the dean of the faculty of medicine together with the deans of other faculties compose the Academic Senate

and professors of the faculty of medicine can belong to the Administration Council of the university which is responsible for all financial matters.

La organización de la enseñanza médica en las Universidades italianas

Este artículo es un detallado informe sobre la Educacion Médica en Italia. Lo que esencialmente distingue la enseñanza médica italiana de la americana es lo siguiente: Las Universidades en Italia son siempre instituciones del Estado, y el *curriculum* es el mismo para todas las Facultades de Medicina. No hay selección en cuanto a la admisión de los estudiantes. Todos cuantos aprueban el bachillerato, tanto el de *maturità classica* como de *maturità scientifica*, pueden matricularse en una Facultad de Medicina, lo mismo que en cualquier otra. Esta falta de restricción tiene como consecuencia un número excesivo de estudiantes médicos con respecto a las facilidades y personal de enseñanza, y por eso se habla ahora, en ciertos círculos, de la necesidad de introducir algún modo eficaz de selección. Aunque hay exámenes cada semestre, que los estudiantes tienen que aprobar para pasar al curso siguiente, no hay límite en el número de veces que un estudiante puede presentarse a estos exámenes. Son 6 años de estudios en la Facultad de Medicina, y después de haber pasado todos los exámenes cada semestre, el estudiante está sujeto a un examen final, que consiste en una tesis escrita y dos pequeñas disertaciones orales que le confieren el título de Doctor en Medicina. Sigue luego un período de 6 meses de internado en diferentes secciones de un Hospital, y sólo después de ese internado el graduado puede presentarse al examen de Estado, que le capacita para ejercer la Medicina. El *curriculum* de los estudiantes de Medicina en las Universidades italianas se estudia detalladamente en este informe, así como la organización del profesorado y la de las Facultades de Medicina.

* * *

Separatas de este artículo, en español, podrán obtenerse si son solicitadas por un mínimum de 25 lectores.

Presented at the 67th Annual Meeting

Association of American Medical Colleges

November 12-14, 1956

The Significance of the 1956 Institute on the Evaluation of the Student from a Dean's Standpoint

JOHN MCK. MITCHELL

Dean, University of Pennsylvania School of Medicine

I HAVE THE PLEASANT but difficult assignment of presenting to you from the standpoint of a dean, my impressions of the recently completed "Institute on the Appraisal of Applicants to Medical Schools." This was a wonderful Institute and I only wish I could distill its spirit and bring it to you. This is the fourth of these Institutes which I have attended, and so far as I am concerned the best, the best I think because the subject was one of vital interest to everyone in attendance, not to just a segment, the best because everyone was not only strongly motivated but motivated for the right reasons, the best because the experts had a better understanding of our problems; the best also because of a couple of mundane matters—it was not too long—and the place and climate in which it was held were conducive to thinking and work.

Importance of problem

Several times during the Institute a question was raised with regard to whether the amount of time, energy and money spent in the admissions procedure were justified. To me, there is no more important phase of our work, for I ask you to remember that the whole future of medicine depends on the caliber of the men and women we bring into it today —for "the student is father to the physician." And this should be the basic philosophy of our admissions policy and we should bear in mind that our ultimate objective is one thing and one thing only—that is, the delivery of service to the patient. "This is the final objective of the laboratory, this is the end result of research, this is the very reason for the existence of the hospital." Now please don't misunderstand me; I am not suggesting that we accept only those students who in the parlance of the guild would "make good practitioners." Far from it, my plea is rather that we accept those whom we think likely to contribute most to the eventual care of the patient, regardless of whether that contribution lies in

teaching, in research, or at the operating table.

Function of the admissions committee

Having defined its ultimate objective, we are now ready to turn to the modus operandi of the admissions committee.

At the Institute the question of the functions of such a committee was discussed. There was common agreement that it should

(1) Find the best possible students.
(2) Interest them in medicine.
(3) Select those best suited to their own school—in a manner that would be
(a) Least traumatic to the students
(b) Most effective for the school, always, within the bounds of fair play.
(c) Satisfactory to the colleges from which the students came.

The best possible students

Who constitute the best possible students—what are we looking for? We are looking for those with: Intellectual ability, integrity, strong motivation for the right reasons, personal qualities of warmth—depth—breadth—energy—drive, and so on. These are ideals, and the combination of all of them in a single person is not apt to be found in many.

The selection process—intellectual characteristics

How should the committee go about picking out those who most nearly meet the above criteria? First, by an estimation of

Intellectual ability

This is probably the easiest of all qualifications to assess. We must not, however, be led by this into letting our selection degenerate into a choice by college grades alone. I feel sure that this is but rarely done, but as the easiest and most palatable reason, it is often used to explain failure to gain admission, and we should be careful to make it clear to prospective students, college premedical advisors, and all others who consult us, that while college grades are of primary importance, they are by no means the sole basis for selection.

Medical College Admission Test

In the estimation of intellectual ability, how should the Medical College Admission Test be used, and how far can it be trusted? Two things stood out in the proceedings of the Institute:

(1) That if you use the Medical College Admission Test score alone as predictive of medical school standing and grades, you can expect to be disappointed.

(2) If on the other hand you fail to use the Medical College Admission Test as a supplement to other information, you are discarding a very useful tool.

The selection process—non-intellectual characteristics

What, then, about the evaluation of non-intellectual qualifications?

Integrity

It was agreed that integrity was of the utmost importance, but that it was also impossible to determine except in rare instances.

Motivation

It was agreed that motivation was a very important item, and that strength of motivation was likewise important, but it was pointed out that strong motivation for the wrong reasons often leads to trouble. Thus the student strongly motivated to use medicine as a means to make money,

might do very well in medical school, but eventually turn out to be an unhappy and dissatisfied physician.

Other characteristics

In the evaluation of other characteristics of the applicant, the use of the *Interview* came in for the major share of attention and was in considerable measure castigated as the villain of the piece. You have heard of this from other speakers and I will add only a few random thoughts of my own.

At first my confidence in the use of the interview as a tool was sorely shaken, but I find that it is already returning; confidence not in its predictive value, but because I think its deficiencies in this direction were stressed to the relative exclusion of its over-all usefulness for other reasons. I will content myself with listing some of these other uses:

As Dr. Strothers has told you, you wouldn't hire a secretary—name a new member of your faculty, without a personal interview, and the reasons hold for doing so when admitting a student. In addition:

(1) To verify and clarify information given on the application form, in letters, etc.

(2) To develop leads given in these same sources—including appraisal of the extent and importance of extra-curricular activities, college and otherwise.

(3) To establish a personal relationship between the applicant and the committee.

(4) To uncover any gross deficiencies in personality.

(5) To tell a clearly unsuitable applicant in kindly terms that his chances of acceptance are not good.

(6) To explain features of the school that may be important to the candidate in his choice of a school.

Use of psychological tests

One of the features of this Institute was the smoothness with which we progressed from topic to topic—without the bumpy air through which I am leading you.

And so we moved from consideration of the interview to the use of various *objective* and *projective* tests which might or might not be helpful in filling the gaps in appraisal of the non-intellectual characteristics of the applicant, created by deficiencies in the interview and other means.

In general it was felt that certain tests might be very helpful, although much more experimentation was needed with many of them. At present the Strong Vocational Aptitude Test was thought to be especially useful.

All of the above was given to us by a group of experts in this field and we are deeply indebted to them for their clarity and for the stimulation for more work in this area.

A study of the results of these tests has brought out some very interesting and somewhat troubling data.

Interests of medical students

The interests of medical students apparently tie in much more closely with those of manufacturers, production managers and business men than with those of other professional groups such as teachers, ministers, etc.

A question revolves about whether we should try to, or can, change this. There is a place in medicine for so many varied skills and interests, that I doubt seriously if we should try to make applicants fit into any preconceived pattern. Old adages usu-

ally contain at least a germ of truth, and you may remember one that runs:

> (a) If we accepted no more football players we would ruin surgery.
>
> (b) And another, that to be a good orthopedist a man must first be a good carpenter.

Much as I admire and would like to be able to write good English—I would not want to see all medicine in the hands of a group whose primary interest was writing.

Pragmatic and ideistic schools and students

We learned that certain colleges could be readily classified as *Pragmatic*—i.e., assigned lessons, lectures of the A, B, C, 1, 2, 3 sort, repeated examinations, quizzes, etc., or *Ideistic*—i.e., Seminars—Honors program type of teaching—where the interest lies in the world of ideas, not in rote learning. We learned also that students fell into these same groups, and that pragmatic students were apt to be unhappy and not do well in ideistic schools and vice-versa.

We are all aware of these differences and could cite illustrative instances, although I had personally used different terms. In medicine I thought of it as a shift in emphasis from teaching to learning, which has been taking place at different paces everywhere.

This type of instruction requires a more intellectually mature student and is a matter to which admissions committees should give attention. We should make the type of program in our school familiar to applicants. After having done so, I have had the experience of a pragmatically taught applicant saying that he did not think he was suited to our school.

Premedical advisors

The premedical advisors had an inning and they were very helpful in presenting a number of their problems and ideas as they impinged on us. Like us, they are limited in the kind of students they turn out by what kind of students they get. Both of us, are to a considerable degree, preselected by students. Again it is a two-way street. The premedical advisors have some just complaints at our methods and procedures. One of them suggested that premedical students were somewhat unpopular on campus. There seemed general agreement that it would be better if premedical students were more closely identified with the general group. The advisability of excluding students from the premedical group when they showed themselves unsuited scholastically or otherwise for admission to medical school was mentioned. It was pointed out that while they might be warned and discouraged, it was poor policy to deny to them the right to take the Medical College Admission Test or to apply to medical school.

The types of recommendations received from the colleges had an airing. It was generally conceded that a committee report was preferable but that it should be accompanied by a personal summary or statement. We receive some very helpful comments from this source.

Random thoughts

I have given such a kaleidoscopic view of the Institute that I suspect many of you are in the position of the man in a story told me by Dr. Harwood the other day, of a man who gave a dictionary to a friend of very limited vocabulary, thinking that it might benefit him. When they met

later the friend said, "That was a fine book you sent me, one of the most interesting I have ever read, but I never could find out what the plot was." Indeed, some seemed to feel a little bit that way about the Institute, but I think there is a distinct plot along the lines of a detective story.

The victim is the applicant.
The cast of possible culprits is the admissions committee.
All clues point to the interview as the real villain.
The dean is cast in the role of detective and district attorney combined.

El Congreso de 1956 para la selección de estudiantes de Medicina

En este artículo, el Dr. J. M. Mitchell (Decano de la Escuela de Medicina de la Univ. de Pennsylvania) ofrece un detallado informe sobre el Congreso de 1956, que trató de varios problemas relativos a la selección de estudiantes de Medicina, y discute el significado de dicha asamblea desde el punto de vista del Decano de una Escuela de Medicina. El Dr. Mitchell considera que esa selección es una de las fases más importantes en la Educación Médica, y que nunca se podría gastar demasiado tiempo, energía o dinero en el estudio de los métodos y criterios aplicados a ésta. El objeto principal del proceso de selección es el de descubrir los hombres y mujeres mejor capacitados para rendir servicio a sus futuros pacientes. El *modus operandi* de los Comités de Admisión debe ser el menos "traumático" para los candidatos, y el más eficaz desde el punto de vista de las respectivas Escuelas. Los varios procedimientos empleados deben tener por objeto determinar la capacidad intelectual y las cualidades personales de un candidato. Los "tests" convencionales a los que se suele someter a los candidatos son indispensables, dice el autor, pero sus resultados no deben ser la única base de juicio, sino que éstos deben ser complementados por otras varias consideraciones, ya que dichos *tests* se refieren más bien a aptitudes intelectuales. Entre los factores personales el Dr. Mitchell destaca, de acuerdo con la opinión prevalente en el Congreso, las motivaciones que llevan a un individuo a elegir la carrera médica. Entre los métodos convencionales designados para determinar las características de un candidato, el de la entrevista personal fué, en el dicho Congreso, objeto de crítica acerba. Mas el Dr. Mitchell, reconociendo los defectos que tiene, sin embargo cree que dicho procedimiento tiene su utilidad. En cuanto a los *tests* psicológicos, la opinión general, a la que el autor parece adherirse, fué que algunos son útiles (sobre todo el llamado "Strong Vocational Aptitude Test"), pero que aun es necesaria mucha experimentación para que cumplan adecuadamente sus propósitos. En sus conclusiones, el autor señala que los procedimientos y criterios de admisión, necesariamente han de variar según los diferentes tipos de Escuela.

* * *

Separatas de este artículo, en español, podrán obtenerse si son solicitadas por un mínimum de 25 lectores.

Career Interests and Expectations of U.S. Medical Students

DON CAHALAN, PATRICIA COLLETTE AND NORMAN A. HILMAR

JUST BEFORE THE END of the 1956 school year, more than a thousand male students in approved medical schools throughout the United States were interviewed concerning their career interests and expectations. Since the schools and the students were selected by modern sampling methods, the students interviewed constitute a representative cross-section of American male students in all four years of the entire group of approved medical schools in the United States.[1] This article presents those findings from this study which seem likely to be of special interest to medical educators.

Most medical students in the U. S. appear to be exceptionally well-satisfied with their choice of a profession and to be looking forward with considerable confidence to achieving the particular careers in medicine that they desire. The present study shows that only one per cent could think of other careers that would be *more* satisfying, while more than half of them said, "It's the only career that could really satisfy me." In commitment to medicine as a career, there was little difference in sentiment between those who were just finishing their first

[1]The survey consisted of personal interviews with 1,086 male medical students conducted by the National Opinion Research Center, University of Chicago, in May and early June 1956. These students were all males who were citizens of the United States and who would not be more than 32 years of age at graduation. This sample of students was drawn by random methods which assured every medical student in the country an equal chance of being included. Two stages were involved in drawing the sample. First, a random sample of 44 medical schools was drawn from the entire list of approved medical schools in the United States after the schools were stratified by regional location, method of financing, and other relevant characteristics. Second, a sub-sample of students in each of the 44 schools was randomly

(Cont'd)

drawn, after stratification by year in school, from alphabetized lists of students maintained by the Association of American Medical Colleges. The wholehearted cooperation of the medical schools involved, and valuable help given by Dr. Dean F. Smiley, Secretary, and Dr. Helen H. Gee, Director of Research for the AAMC, made it possible to achieve a 97.5 per cent rate of completed interviews among the students selected.

The research was supported by the Office of The Surgeon General, Department of the Army and was directed for the NORC by Mr. Cahalan and Miss Collette in cooperation with Captain Hilmar, Medical Service Corps, US Army. The views expressed are those of the authors and do not necessarily represent the official views of the Army Medical Service.

year of medical school and those who were ready to graduate.

When students were asked what they expected to like best and to like least about being a doctor, they usually mentioned more things they would like than things they would dislike. The principal career satisfactions anticipated and valued by students revolved primarily around doctor-patient relationships—"helping others, being of service, being useful" or "working and dealing with people."

Potential *disadvantages* of medicine as a career were not stressed by medical students in general. The most frequently mentioned drawbacks were that the doctor's work might interfere with his personal or family life because of long hours and night calls and even these disadvantages were cited by fewer than half of the students. It seems likely that for at least some medical students, such complaints are designed to enhance the prestige of the medical profession in general and do not represent serious misgivings about their chosen vocation. However, as we shall see later many medical students apparently prefer careers which will minimize interference with their personal lives. Most students consistently appeared to prefer those aspects of medical work that were *directly* related to the care of patients. When forced to make a choice, nine out of ten said they would prefer working "directly with patients almost all the time" rather than ". . . to work at medical problems that do not require frequent contact with patients." In rating the relative importance of a number of considerations to be borne in mind in choosing one's specific career in medicine, three out of four students said it was very important to have the opportunity to know one's patients well, whereas only one out of six rated as very important "making a good income" or "being able to establish your own hours of work."

Career preferences and reasons

Seven out of eight medical students preferred a nonsalaried type of practice, almost equally divided into those preferring individual independent practice (26 per cent), those preferring individual practice with the pooling of some facilities with other doctors (31 per cent), and those preferring a group practice in a partnership arrangement (30 per cent).

As might be expected, some interesting relationships were found between the outlooks of students and the careers they preferred. Among those who preferred individual independent practice, 79 per cent attributed their preference to their desire to "be my own boss." This represents a substantially greater emphasis on independence by these students than that demonstrated by students preferring other practice situations. In addition, students oriented toward independent private practice were more likely than other medical students to cite as a reason for their career preference the nature of patient contact assumed to characterize the preferred career. Among students who preferred an individual practice with pooled facilities, the most frequent explanation given for their preference was the efficiency or economy of such an arrangement (cited by 72 per cent), desire to "be my own boss" (60 per cent), and the availability of ready consultation with other doctors (33 per cent). Medical students who preferred a *group* practice in a partnership arrangement gave as their main reasons

lessened interference with one's private life (cited by 62 per cent of this group), the opportunity for consultation (57 per cent), and the efficiency or economy of such an arrangement (31 per cent). Intellectual stimulation was cited as a reason for their preference by 22 per cent of those students interested in a group practice, but by only a handful (4 per cent) of those preferring *individual* practice with or without pooled facilities.

Among the nine out of ten medical students who preferred some type of private (fee-for-service) practice, the rejection of salaried practice in any form appeared to be based primarily on a fear of restrictions and the limitations that might be imposed upon the way in which a salaried physician would practice medicine. Other reservations about salaried practice were primarily variations on the same theme: e.g., that the relationship between doctor and patient might be unsatisfactory, that the doctor might have little variety in the medical cases he would handle, and that his chances for advancement would be determined by others. These major objections to salaried medical careers were levelled against both salaried *private* practice and salaried practice *for some governmental agency or one of the Armed Forces.*

Most students *expected* to achieve the type of practice they wanted. This was true of five out of six of those who preferred an independent individual practice. However, it was true of only four out of six of the students who preferred a practice with pooled facilities or a group practice. The data show that individual, independent private practice was the career *expected* by many students, who in fact, *preferred* other types of private practice.

Medical specialization

The interests reported by the medical student of 1956 are in keeping with the general trend away from general practice and toward specialization during recent decades. Fifty-seven per cent thought that after their internships and possible service in the Armed Forces, they would be most likely to take a residency, while an additional 14 per cent expected to specialize to some extent. Only 25 per cent expected to be general practitioners.

An analysis of the orientations and values of those who expected to have a general practice showed that these medical students were more concerned than others about doctor-patient relationships, while those who planned to specialize were oriented relatively more toward the "intellectual" aspects of medicine i.e. science or research or teaching, meeting challenging diagnostic problems, and also toward achieving prestige within the profession.

All students were asked, "If you were to specialize in your practice, what field of specialization do you think you would prefer most? What field . . . do you think you would like the least?" Their responses are presented in Table I.

The heavy emphasis upon internal medicine does not appear to be merely a reflection of the preferences of those intending to become non-specialized general practitioners, to whom internal medicine would be a primary concern. Even among those students who intended to take a residency, 30 per cent said they would prefer to specialize in internal medicine.

The reasons given most often by medical students for *preferring* a particular specialty were: the intel-

TABLE I

Field of Specialization	Most Preferred	Liked Least
Internal medicine	30%	1%
Surgery	22	11
Pediatrics	10	5
Obstetrics and gynecology	10	7
Psychiatry and/or neurology	8	13
Orthopedics	2	3
Pathology	2	11
Ophthalmology	1	4
Otolaryngology	*	5
Public health or preventive medicine	*	6
Other specialties	5	27
Can't decide	10	7
	100%	100%

lectual challenge and the learning opportunity provided by the specialty (cited by 33 per cent) the attractiveness of the subject matter or the aims of the specialty (24 per cent), the quickness or certainty of benefits to patients (18 per cent), comprehensiveness of specialty (16 per cent), a preference for dealing with the type of patients to be treated (14 per cent) and the nature of the practitioner's relationship to the patient (14 per cent). Reasons offered for preferring a certain specialty *least* were generally the obverse of the above—that the given specialty was seen as lacking intellectual challenge (cited by 24 per cent), being uncongenial in subject-matter or objectives (22 per cent), offering little personal contact with patients (22 per cent), or resulting in slow or uncertain benefits to patients (16 per cent).

Income expectations and economic outlook

Three out of ten medical students specified the financial return or economic security as one of the things they expect to like best about being a doctor, and student estimates of the economic rewards in the medical profession indicate why this is so. The medical students' conception of the financial return from a career in medicine is a fairly realistic one when measured against recent data on physicians' incomes, but students as individuals expect to do even better financially than the average. The medical students' estimates of the annual net income of general practitioners 10 years out of medical school averaged out to $14,010; they looked forward to slightly higher incomes for themselves at the same stage in their careers—$14,050 median for those students planning a general practice, $15,280 median for those with an interest in specialization. Four out of five students felt that, after a comparable period of time, they would be earning at least as much as the "average general practitioner" out of medical school 10 years, and only one student in eight expected to be making a net income of less than $10,000 at that stage of his medical career.

The income expectations of the medical student were related to his year in medical school and the type of practice he contemplated. Senior students, looking ahead 10 years, estimated their annual net income at $16,230, or almost $2,000 more than did freshmen when they looked ahead 13 years. Senior students plan-

ning a general practice anticipated incomes with a median almost $3,500 more than their freshman counterparts. In each of the first three classes of medical school, students with an interest in specialization expected higher incomes 10 years after graduation than did students with general practice plans. However, among senior students, the reverse is true—senior students with general practice intentions anticipated $16,820 incomes 10 years out of medical school while those seniors expecting to specialize some or planning on a residency estimated their income (10 years after graduation) at $16,100. This reversal may reflect on the part of seniors a more realistic awareness of the prolonged low income period usually entailed in preparing for specialization; our data do not permit us to test the validity of this explanation.

The confidence medical students felt about their short-range, financial prospects carries over into their long-range expectations. As a group they anticipated annual net incomes when their careers are at their height, which are 50 per cent greater ($22,340 median) than the earnings they expect when they have been out of medical school only 10 years. Only one student in a hundred predicted he would be making less than $10,000 at the peak of his career. Long-run income expectations appear to be subject to the same influences as short-run expectations—seniors anticipated peak annual incomes averaging about $2,000 more than those expected by freshman; students planning to specialize anticipated peak annual incomes about $3,000 more than the incomes expected by students planning on general practice.

Almost half of the medical students reported earning some money during the course of the school year, but these earnings usually are modest, averaging about $64 a month. The proportion of students earning money during the school year increased steadily from the first year on—from one freshman in four to two out of three seniors—reflecting, in all probability, increased opportunities for employment available to upperclassmen and increased financial pressures exerted upon them by family obligations and prolonged cost of schooling. Not only do more seniors than freshmen work, but the seniors' average monthly earnings ($85) are more than double those of the freshmen (a quarter of the senior students earn an average of $100 or more a month during the school year).

Going into debt during the course of acquiring a medical education is not infrequent according to medical students enrolled in school in 1955-56. One out of every three students (and almost half of the seniors) reported that he would be in debt or would feel under financial obligation to someone at the end of the 1955-56 school year. The amount students report they will have to "repay sooner or later" increases steadily from the freshman year straight through to the senior year. Among students who reported being in debt at all, freshmen reported a median debt of $1,280 while seniors reported a median debt of $2,800. In view of these differences between classes in current indebtedness, it is worth reporting that there were *no* important differences between classes in the proportions anticipating financial difficulties in getting established in their medical careers. Getting along financially until they get established in practice was expected to be "very difficult" by 12 per cent of all stu-

dents, as "fairly difficult" by 64 per cent, and as "not difficult at all" by 24 per cent.

Other differences in perspective between freshmen and seniors

The study revealed certain differences in outlook between students in their first year in medical school and those in their senior year. In the absence of any evidence to the contrary, these differences are assumed to reflect the impact of four years in medical school rather than possible differences in the backgrounds of those respondents who were freshmen and those who were seniors. The backgrounds of students in the various classes appeared to be quite similar.

A definite focusing of career interests seems to take place between the time students enter medical school and the time they graduate. For example, significantly more seniors than freshman said they were "not at all interested" in even part-time medical research or medical administration during their medical careers. Furthermore, *fewer* seniors than freshmen evinced any interest in even short-term work with Federal medical agencies.

Perhaps the most notable differences between freshmen and seniors concerned the type of medical practice they preferred. As was demonstrated earlier, students in all four classes overwhelmingly favored one of the traditional forms of nonsalaried practice as opposed to any form of salaried medicine. However, more freshmen (33 per cent) than seniors (22 per cent) preferred to go it alone in individual private practice without pooled facilities, while more seniors (39 per cent) than freshmen (22 per cent) preferred a group practice in a partnership. In view of these differing career orientations, it is perhaps not surprising that two-thirds of the seniors but fewer than half of the freshmen said they were likely to take a residency in some specialty.

Seniors differed from freshmen not only in *what* they wanted to do, but also in *why* they preferred one type of career rather than another. For example, among those who preferred group practice, substantially more of the seniors (79 per cent) than the freshmen (47 per cent) cited as a main reason the belief that group practice would involve less interference with their personal, private lives than would other types of practice situations. Freedom from interference with one's private life is essentially an *extrinsic* or *situational* consideration, which is not related to the purely professional task of the physician. Other findings also indicate that senior medical students, when they evaluate the merits of a given career, tend to place greater emphasis than do freshmen on the *extrinsic* rewards involved. For example, seniors were more likely than freshmen to say that in deciding on a medical career for themselves, the following factors were very important considerations: "being able to establish your own hours of work;" "making a good income;" and "having prestige within the medical profession."

It seems likely that differences in perspective between freshmen and senior medical students are at least partially brought about by a growing level of sophistication about the "realities" of various medical careers acquired by the student in the course of his medical education. As he progresses through medical school, he is exposed to the attitudes of his peers and especially of his professors —attitudes which may cause him to

lose interest in *some* medical careers and to look with increasing favor upon others. By the time the medical student is a senior, the imminence of his choice of his own career would logically lead him to scrutinize carefully the relative merits of various careers in terms of his *own* wishes and also the wishes of those dependent upon him. (More than half of the 1956 seniors in this sample were married, as compared to only 21 per cent of the freshmen).

It is manifest that during the student's four years in medical school, his initial enthusiasm and somewhat unselective interest in a broad range of medical activities becomes progressively tempered— and narrowed —by the attitudes and information to which he is exposed. The data provided by this study may help medical educators to anticipate trends toward serious shortages or surpluses of physicians in various medical career fields as well as in particular medical specialties.

Los intereses y las expectaciones profesionales de los estudiantes de Medicina de los Estados Unidos

Poco antes de terminar el año académico de 1956, más de 1.000 estudiantes (sólo hombres) de Medicina fueron interrogados sobre sus intereses principales, expectaciones y planes para el porvenir. Las Escuelas y los estudiantes entrevistados fueron seleccionados según nuevos métodos científicos que aseguran obtener una sección transversal representativa de todo el grupo médico estudiantil de este país. El presente trabajo es un informe detallado, acompañado de tablas estadísticas, de dicha encuesta, que fué llevada a cabo por el *National Opinion Research Center* de la Univ. de Chicago. En resumen, resulta de este informe que la mayoría de los estudiantes médicos parecen estar excepcionalmente satisfechos con la carrera elegida. Su principal interés profesional gira en torno a la relación entre médico y paciente, según queda expresado por la marcada preferencia por trabajos directamente relacionados con el tratamiento de enfermos. Hubo, por lo general, mucho más énfasis en las ventajas y beneficios que brinda la carrera de médico que en sus inconvenientes y dificultades (los inconvenientes mencionados se referían sobre todo al peligro de que el ejercicio de la profesión pudiera interferir con su vida familiar). De cada 8 estudiantes entrevistados, 7 preferían tener una práctica privada independiente (solos o en colaboración con otros médicos) y no empleos a base de salario, y la mayoría de los estudiantes confiaba en que lograrían tener el tipo de práctica que deseaban. En cuanto a la cuestión de las especialidades, los resultados de la encuesta confirman una vez más la tendencia actual a alejarse de la especialización en favor de la práctica general. En la selección de determinadas especialidades, la Medicina Interna se halla en primer lugar, un 30%, y la Cirugía en segundo, con un 22%; un 8% de los estudiantes que querían especializarse, pensaban dedicarse a la Psiquiatría o Neurología, y sólo el 1% a la Medicina Preventiva o Salud Pública (Pediatría, Obstetricia y Genecología tenían, respectivamente, un 10% de las preferencias). Estos datos y otros similares obtenidos por dicha encuesta pueden, según señalan los autores, ser útiles para anticipar una futura escasez, o exceso, de médicos en los diferentes campos de la Medicina. Al estimar las compensaciones monetarias que podían esperar en el ejercicio de la profesión, la mayoría de los estudiantes entrevistados mostró un notable sentido realista. Por otra parte, 3 de cada 10 de ellos especificaron que la seguridad económica que ofrece la profesión médica era uno de los aspectos de la carrera que más les atraía. Un análisis detallado de los resultados de la encuesta revela también algunas diferencias significativas en la actitud, perspectiva y proyectos de los estudiantes de primer año comparados con los de último año, consistiendo la principal divergencia en la selección del tipo de práctica que prefieren, y en las razones con que justifican su preferencia. También es significativo el hecho de que el gran entusiasmo que suelen mostrar los estudiantes al iniciar la carrera, se va templando en la medida en que avanzan en sus estudios, al tiempo que se estrecha el radio, antes excesivamente amplio, de sus intereses.

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Separatas de este artículo, en español, podrán obtenerse si son solicitadas por un minimum de 25 lectores.

From a Seminar on Medicine at the inauguration of Chancellor Edward H. Litchfield, University of Pittsburgh, May 10, 1957

The University and Medicine

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THE theme "New Dimensions of Learning in a Free Society" is at the same time suggestive and broad. Equally provocative is the thought expressed in the invitation that I might address myself to the proposition that the university is challenged with new horizons in the field of medicine. This implies that both the university and medicine are changing. I believe no one will question such a statement. One cannot comment with the same assurance, though, on the future. It is easier to describe either the present state of affairs or to identify the events leading up to now. However, without further explanation, or apology, I shall attempt to point up what seems to me an obvious challenge to the university in medicine.

Three interrelated ideas

Three interrelated ideas form the core of this discussion. Medicine has reached a phase in its growth which assures continued development; it has struck a stride. The university is an institution, possibly the sole one, adequately equipped—and obligated—to anticipate the future. Finally, medicine, or more broadly stated, health, is a phenomenon, or function, of society which transcends the proprietary interests of the practicing professions, service agencies, or educational institutions.

Recently, American medicine has been characterized as "being on its own,"[1] and as "coming of age."[2] "On its own" because it is no longer dependent on a single or primary outside relationship for its continued growth such as the successive influence exerted by British, French and German medicine and science. "Coming of age" because it is more aware of itself as an activity of society. A further observation has been made that nowhere can this evolution, social and scientific, be accomplished so well as in the university which must translate growth into future action.[2]

The growth of modern scientific medicine need not be detailed for this audience. But, we are faced with a curious paradox. In spite of progress in prevention of disease, the alleviation of illness and the postponement of death, there is an unrest and stir within public, professional and educational circles. The public wants more of the fine medicine it is now receiving. The health professions are looking for new and better ways to extend to the public the benefits of

scientific achievement. And, educational institutions are concerned about preparing future practitioners properly so they can meet continuing or startling change such as has occurred in recent decades. It may, therefore, be helpful to look on the contemporary scene as a period marking the culmination, but by no means the termination, of an era and the beginning of another—one in which the sociology of medicine will be evident. I know that vague generalizations of this sort are always made when one is in doubt as to just what is happening about him, but I do believe that in this instance we can elaborate on the idea.

Scientific medicine as it is now defined is less than 100 years old. However, its roots extend back into the preceding centuries since medicine was one of the cornerstones of the medieval university; indeed the mother of the university. It demanded scholarly pursuit. In the mid-19th century, medicine, along with other human endeavors, was beginning to experience a marked change within itself. Now the decades that followed can be viewed as a time when medicine, as then perceived, was reaching beyond itself for knowledge and experience that might offer new light and food for growth. Sometimes by direct, but more often by indirect routes, it drew increasingly on the natural sciences which were also experiencing rapid growth through hitherto unimagined discovery. Again, it is unnecessary to relate for this audience the rapid succession of events which resulted in the establishment of medicine on a firm biological basis.

However, with the intense absorption in the job at hand, doctors have not always been too aware of what is happening about them nor even within medicine. Today medicine is one of the largest activities of contemporary society, but doctors are inclined to think of it only as the job of approximately 200,000 professionally educated and highly skilled individuals. Hospital trustees and administrators may think of medicine as some 7,000 hospitals costing many billions a year to operate. On the other hand, there are the nurses, social workers, skilled technologists, pharmacists, research workers, and other persons engaged full-time in health and medical activities, who out-number the doctors many times over and who know that the individual doctor cannot get along without them—and, also, that they can't get along without the doctor. The pharmaceutical and allied industries view medicine through the hundreds of millions of dollars spent annually on research and manufacture. Government looks at it through the billions it spends on health needs of people. From all of this one is forced to wonder whether any one of these various groups is fully informed on what all the others are thinking, or doing, or planning. Are there crucial vantage points where this array of health personnel, skills, services and institutions are looked at as a whole or even in relation to each other. Generally, I think not, but I believe the university can be one.

The future role

This brings me to the heart of this talk. So, without further ado, let's plunge into the middle of our problem by examining the future role of the university in certain aspects of medicine. By medicine I mean "that wide spectrum of knowledge, professional skills, technologies, and physical facilities which in this

modern day can be brought to bear in the care of the sick and the prevention of illness."[3] I have already referred to the university as an institution in modern society designed to anticipate the future.[2] This is so because it is a community of scholars engaged in teaching and research—teaching the young who can only look ahead, exploring the past to learn how we came to be what we are, and probing the unknown for new knowledge which only leads into the future. Whitehead,[4] aptly describes the university when he says "the justification for a university is that it preserves the connection between knowledge and the zest of life, by uniting the young and the old in the imaginative consideration of learning. The university imparts information, but it imparts it imaginatively." In the preface to this book of essays Whitehead registers a "protest against dead knowledge, that is to say, inert ideas," by saying "The students are alive and the purpose of education is to stimulate and guide their self-development. It follows as a corollary from this premise that teachers also should be alive with living thoughts."

If we can now think of a university in terms of young people, learning, research, imagination, new ideas and future, we should be prepared to explore certain interrelated propositions as they bear on our concern with the future of medicine. These propositions are:

(1) That the student's education must help him to understand the characteristics of the complex social system of medicine so he can be effective in it whether as a teacher, research worker, or physician.

(2) That his role and function as a professional person is best learned in a setting where patient care in all its ramifications is subjected to constant study.

(3) That preparation for the future requires not only essential knowledge and skills but also the proper attitudes and sense of values, and,

(4) That the university will come nearer to fulfilling its purpose if it can apply its research talent to the educational or learning process in medicine as well as to the problems of health and illness.

Student is common denominator

The student is the common denominator of these propositions. His growth is the concern of education. He will determine the future of medicine in the coming decades. Just as the patient is now recognized as a socio-psycho-biological unit, so the student may be treated as a growing and developing organism subject to the influence of all the environmental factors—intellectual, social and physical—which surround him. Regardless of his ultimate professional choice, the student, I am sure can be prepared for medicine in its broadest aspects if he is given freedom to grow in a provocative and creative university environment; actually, only there *can* he grow.

Education for medicine is not confined to just the four years in medical school. It is a never ending process, but for this discussion I want to include only the 10-12 year post-high school span—three to four years of college, four years of medical school, and two to four years of graduate clinical or scientific study. For the average individual, this period now extends from age 18 to age 26 or 28, but it is becoming longer all the time. What is it that should take place in this period as the student moves from his position of a

layman in society to that of a professional person—one capable of accepting responsibility for the welfare of the person who seeks help from medicine. What character traits must the physician possess and what knowledge and skill must he have? Do we really know what happens to the student and how it happens?[5] Is the differentiation of the true physician or scientist from the highly trained technologist clear? Surely the university's primary goal is professional education, not merely vocational training. The technological skills of medicine could be learned in a shorter time, so why demand the longer? My immediate answer is that by providing longer periods of education the American university in the last half century has accepted, without consciously asking itself "why," the responsibility of preparation for professional leadership in medicine. Possibly if we return to our earlier propositions we may get some clues to the real answer; that is, if we still accept the premise that medical education should continue to be a university responsibility.

Medicine is a discipline which must be practiced and demonstrated by a university faculty if it is to be adequately taught. This means that the university has an opportunity to deal with medicine in all its aspects and also explains why the university has acquired hospitals and clinics, which serve the community, as a part of its teaching and research equipment. The rapid evolution of scientific medicine proves the wisdom of the fundamental recommendation of the Flexner report[6] that medical education become a university discipline where it could profit by close association with the natural sciences. Now it has achieved a position in the university to profit further through linkage with the social and behavioral sciences. From these will come new knowledge to help explain many unsolved individual and community health problems. The social and cultural implications of many expressions currently in vogue such as mental health, psychosomatic medicine, chronic disease, aging, rehabilitation, and the adaptive processes make it unnecessary to elaborate on the favorable position of the university. It can pioneer in the continued evolution of medicine through the next several decades by drawing upon the expanding knowledge in the social and behavioral sciences. Such an extended frontier of exploration is the kind of setting in which future professional leaders in the health sciences should grow up.

A crucial period

Our first proposition states that the student must learn something of the characteristics of the complex and evolving social system of medicine. Obviously this will not be taught in a course, nor is it the prerogative of a single department, basic or clinical, nor even the primary job of the college, the medical school, or the hospital. It is the responsibility of all, and herein lies the reason for believing that the entire span of formal education for professional service is a crucial period of the student's growth. In college he will learn the basic characteristics of living matter, the elements of organism-environment relationships, and the social institutions of man. These will be learned through the natural, social, and physical sciences, the humanities, and the arts. He will also learn something of the nature and behavior of man, his aspirations, his pleasures, his sorrows and his achievements. In medical school the student will see health and illness as

aspects of living. He will see diseases caused by exogenous and endogenous factors. Human environment will be recognized as having inanimate and animate objects in it. The student will begin to see that for the human being other human beings are important environmental factors, possibly the most important. He may even begin to view himself as an eventual element in the individual patient's environmental pattern.

For the entering student, medical school represents the most specific example of medicine thus far in his experience. He will respond to the distinctive requirements of the science laboratory and the hospital ward, but what will he observe or feel in the relationships and attitudes of persons with the diverse interests of basic research and clinical practice? For the first time he will meet others engaged in medicine—the public health worker, the nurse, the social worker, the dentist, the technologist and the administrator. How will he discover that the hospital is merely one facility of medical service; that the patient is also dependent on many health services outside of its walls? Possibly he will be aware of the heavy hand of the costs of medical and health care, but, if fortunate, he will learn something about how the community and patients pay them. He may even understand that society has contributed to the cost of his preparation for community and professional service. However, a couple of nagging questions are likely to remain. Is the medical school designed to meet his needs or to suit the convenience of the faculty? Likewise, is the hospital designed to meet the patient's needs or to serve the proprietary interests of the staff? Newcomers to the medical scene can hardly be criticized for wondering at times whether the patient is the reason for the doctor or the doctor the reason for the patient.

Traditional subjects

I hope you will not feel such questioning is too far a cry from learning to be a doctor, but I do believe there is need for the fullest comprehension of the persons and of the setting of medicine. Nothing has been said thus far about the traditional medical subjects of anatomy, chemistry, internal medicine, or psychiatry, nor have I questioned the structure of the medical curriculum. Worry over content and organization of subject matter within the medical school itself as we talk about the university and medicine nets little unless we first realize that the nature of the whole setting in which the student's education takes place and the attitudes of the persons involved with it have much to do with what he learns from it.

Our second proposition should help to fortify the argument of the first that one of the objectives of medical education is to understand medicine as a community and social phenomenon. It is now proposed that the medical student can best learn his role and function as a professional person in a situation where patient care in all its ramifications, not merely treatment of disease or limited medical care, is a subject of constant study.

In a recent issue of SCIENCE, Vannevar Bush[7] says that a professional person ministers to people with dignity, possesses special knowledge and is subject to a code of performance and behavior. Paul Klapper[8] pointedly says that "Medical education is a preparation for social service; it is a preparation for a consecrated life." He goes on to comment that "To the extent to which medical

teaching is a preparation for set practices and fixed relationships, to that very extent does it approximate vocational training for a craft. Medical teaching which prepares the medical practitioner for change, not only in his professional relationships but also in the basic concepts on which his scientific knowledge rests, achieves the stature and the dignity of humanizing education." Klapper uses the expression "humanizing education" to emphasize the difference between professional education and vocational training. These goals of ministration and humanizing education can be achieved only in an educational setting where the patient is dealt with in a comprehensive and dignified manner.

University hospital

The principal site for patient care in the university is the hospital which at the same time is a research laboratory in patient care and a community service institution. What goes on in it represents what the student is learning and what the community is receiving. It contains clinics, beds, X-ray, pathological and chemical equipment, and has a large administrative, technical and professional staff. The professional staff is engaged in many spheres of action—medical, nursing, social work, and basic science. But, the objective of all is to help the patient. Some patients occupy beds, some attend outpatient clinics, some are severely ill, some only moderately so, and a few—far too few—seek health advice. The philosophy of patient care may differ according to the floor, wing, clinic or even the door by which one enters the building. How a given specialty or service is perceived may even vary from one end of the building to the other. So, how is the student to comprehend the patient in his totality and where will he be able to apply his understanding of the basic principles of living organism behavior, such as no part or function operates independently of all other parts and functions and that life is a continuous process of adaptation and adjustment?

Possibly in this modern day the undergraduate medical student is coming, or could come, to his period of clinical training far better prepared for the complexities of human health and disease than the teaching situation permits him to deal with them. From his college days he should know something of the nature of man and his social organization. In the medical school he has sensed the purposefulness of growth from anatomy. From biochemistry he has learned a new language of biology, and in physiology he has experimented with the mechanisms of homeostasis. In pathology he has studied organic and functional change and has a rather clear idea of the specific disease process in terms of etiology, tissue damage and healing. The student's learning problem is one of organizing his varied knowledge in a manner useful to his patient and satisfying to himself. To complicate the picture, however, the student now sees the contributions of the nurse, the specialized therapist, the social worker, and the community health agency to the patient's welfare. Frequently he will hear the expression "health team," and will wonder who its members are. His confusion will be further compounded when he learns that the doctor, who is the leader of the team, does not always understand what the other members do or how they are best equipped for it.

Experiments needed in health services

I would suggest therefore that in

order to help the student as well as serve the patient there is urgent need for study and active experimentation in the organization and rendering of health services to the patient. In what form will the patient accept them most readily and from whom? How can he be assured the benefit of all the professional services and technological skills in the university hospital? The outpatient department, the inpatient services, community relationships, the respective functions of the more general as well as the highly specialized services, and the duty of each kind of professional person will all come under critical review. The unique role of the doctor in relation to the other health professionals will become clear as his job is viewed in this perspective. In an atmosphere of exploration the student, to quote Klapper[8] again, should be prepared for change, "not only in his professional relationships but also in the basic concepts on which his scientific knowledge rests." This is education for the future.

The third of our four propositions now follows without argument and can be dealt with briefly. The student can develop proper attitudes and sense of values only in an educational environment where there is continual alertness about the welfare of the patient; where those charged with patient care are never satisfied that what is being done nor the way in which it is being done is the best. Stimulated by such an educational environment the student should accept nothing less for his own growth than his participation in the creative and imaginative planning and rendering of patient care going on about him. It is fair to assume he will develop certain desirable attitudes and sense of values in proportion to his participation and to the responsibility he assumes with others in rendering and evaluating patient care.

Our next and last proposition that the university engage in research in education for medicine requires that we justify the essential thesis of this meeting that medicine is a logical discipline for university education. We have discussed the university as an institution obligated to look ahead, medicine as being increasingly aware of its social function, and education of the young as a process of growth involving their intellectual, emotional and social development. This thesis is not foreign to the thinking in the University of Pittsburgh. In 1822 the first principal of Western University, your progenitor, said "the young physician should never be sent among his great responsibilities without the preparation that human wisdom and the experience of former ages can bestow upon him."[9] That, plus research into the fundamentals of knowledge and learning, is just what we are talking about.

Obviously, I am not so presumptuous as to suggest how you should go about your job in relation to curriculum organization, course content, interprofessional collaboration and relationships, total elapsed time from high school to practice, and like matters. Rather, I am simply saying that a university medical faculty cannot ignore its responsibility to foster a forward-looking and flexible educational program. Therefore, I propose that a university must apply its research talent in all the areas of knowledge—the sciences, humanities and arts—to study of the educational process in medicine. If the "heart of medicine is still the relationship between the doctor and the person who comes to him for help,"[10] how does the student become a professional person? By what process does he learn to minister through a humanizing education?

There is reason to believe that more effective results may be achieved in the sequence of college, medical school and clinical training. For example, there should be a firm progression from basic biology through the biology of medicine, from the behavioral sciences through psychiatry, from elemental mathematics through quantitative methodology, from simple to difficult problem solving. Even more important, the student in keeping with his knowledge and attitudes will gradually prepare for a role in the complex social system of medicine which, consciously at least, is comfortable to him. A faculty engaged in study of the educational process will naturally be helping each student reach his maximum potentiality and capacity. If the faculty thus thinks of education as student-centered and as learning rather than merely teaching, then the faculty and students will be drawn together in their common task of learning. That is the mark of a true university.

Conclusion

In closing, I hope the preceding discussion is sufficiently provocative and will be helpful in our thinking today about the university's opportunity toward the future of medicine. I have tried to emphasize the university's responsibility to apply its research talent to two principal problems in medical education—one, the student's learning process and, two, patient care in its broadest biological and social aspects. I have reasoned that the university has this responsibility because medicine is on the move and the university is an institution which looks ahead. There is one further inescapable observation which may be made. The university is ever assuming, so it seems to me, a more active role of social leadership. Certainly this is so when compared to the days of the cloistered scholar and the ivory tower. The university is very much a part of its community and society. Larger numbers of young people from the community become a part of the university and then return to the community to assume whatever responsibilities their inherent capacities, as developed and modified by their education, dictate. In medicine, patients, who are also members of society, walk in and out of the doors of the university by the hundreds daily. They carry into the university the problems of daily living. The faculty is a further direct link with the community. Its research in basic and applied problems and consultation in all areas, to government, to industry, and to community agencies, extend the knowledge of the laboratory and bring back into the university new problems for study. These relationships within the community make the university's role of leadership and its vantage point for reflection on the whole of medicine a conscious fact, not a hopeful wish. Thus, I do believe the university is ready for new challenges which lie ahead in the field of health. It can aspire to new dimensions of learning in a free society.

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Universidad y Medicina

Con el reciente desarrollo científico, se han abierto nuevos horizontes no sólo para la Ciencia Médica, sino también para las Universidades. El Dr. Lester J. Evans discute en este trabajo las nuevas tareas con que han de enfrentarse hoy día las instituciones de enseñanza. Tres ideas principales forman el núcleo de esta discusión: 1) La Medicina ha alcanzado una fase de su desarrollo tal que asegura una evolución contínua; 2) la Universidad es una institución—y quizás la única—que está adecuadamente equipada—y obligada—a adelantarse al futuro, y, 3) la Medicina, o mejor dicho, la salud pública, es un fenómeno o función de la sociedad que trasciende los intereses propios de la profesión practicante, de las agencias de servicio o de las instituciones educativas. Como señala el autor, la Medicina norteamericana se considera hoy "emancipada" y "mayor de edad": emancipada porque ha dejado de estar sometida, como en tiempos pasados, a la influencia de la Ciencia Médica de otros países (Inglaterra, Francia, Alemania), y mayor de edad, porque es consciente hoy de su papel en la sociedad. En ninguna parte mejor que en la Universidad, dice el Dr. Evans, podría llevarse a la práctica esa evolución social y científica. A fin de poder cumplir adecuadamente su papel, la Universidad debe guiarse por las siguientes proposiciones: 1) La Educación Médica ha de impartirse en tal forma que ayude al estudiante a comprender las características del complejo sistema social que hoy día es la Medicina, con objeto que éste pueda desempeñar eficazmente su función, bien sea como médico practicante, como profesor o como investigador científico; 2) el papel del profesional puede aprenderse mejor en un ambiente en que el tratamiento y atención médica del paciente se hallen, en todos sus aspectos, sometidos a estudio constante; 3) la preparación para el futuro requiere no sólo conocimiento y habilidad esenciales, sino una actitud adecuada y un justo sentido de valores, y; 4) la Universidad se acercará más a alcanzar plenamente sus fines si se muestra capaz de aplicar su capacidad de investigación científica tanto al proceso educativo como a los problemas específicos de salud y enfermedad.

* * *

Separatas de este artículo, en español, podrán obtenerse si son solicitadas por un mínimum de 25 lectores.

Integration of the Last Year of College and the First Year of Medical School

GEORGE A. WOLF JR.

Dean, University of Vermont College of Medicine

PRELIMINARY PLANNING for the re-establishment of a department of preventive medicine at the University of Vermont College of Medicine focused the attention of certain members of the faculty upon the question of preparation of the medical student for understanding new concepts of total patient care. A new and better program demonstrating the relevance of university education to the practice of medicine was sought. The student must be aided to learn, evaluate and synthesize information to a useful purpose.

After much discussion it was decided to extend the student's experience in the liberal arts disciplines as long as possible without lengthening the educational period required for the M.D. degree. A two-year period of combined liberal arts and medical college education following the junior year of college was sought through the establishment of a pilot program to be described.

Acknowledgement

This paper represents excerpts from a study by Dr. Albert Wessen, Ph.D., assistant professor of medical sociology in the department of preventive medicine, college of medicine, University of Vermont, and assistant professor of sociology in the College of Arts and Sciences from whose study part of the text and charts were obtained.

Critical evaluation and suggestions which are incorporated in the final draft of this paper were obtained from the following who were mainly responsible for the program to be described:

Dean George V. Kidder, college of arts and sciences
Dean Lyman S. Rowell, dean of administration
H. B. Pierce, Ph.D., professor of medical biochemistry
George A. Schumacher, M.D., professor of neurology
Fred W. Dunihue, Ph.D., professor of anatomy
Samuel N. Bogorad, Ph.D., associate professor of English
Clinton D. Cook, Ph.D., associate professor of chemistry
Leon R. Lezer, M.D., M.P.H., associate professor of preventive medicine

Although Sigerest[1] first described the plan to be presented here, many similar programs are now being discussed by medical faculties throughout this country.

The program

Six students at the University of Vermont College of Arts and Sciences, having completed three years of college work in 1955 were selected. They were permitted during their fourth year of college to take courses of their choice in the undergraduate college and histology, neu-

1. The University at the Crossroads by Henry Ernest Sigerest, M.D., D.Litt., LL.D., Henry Schuman, New York, 1926, Chapter 10, pp. 106-126. (Trends in Medical Education)

roanatomy, gross anatomy and psychobiology in the medical college. The understanding existed that, if they successfully completed all courses according to medical college grade standards, they would be permitted to take physiology and biochemistry in the college of medicine and courses of their choice in the undergraduate college during the second year of the program (the period which normally would be their first year in the college of medicine.) Following the successful completion of these two years, they would be granted the bachelor's degree and be enrolled as regular second year medical students in the college of medicine.

Development of the program

In the winter of 1955, a group of medical college staff urged that a subcommittee composed of representatives of the Premedical Advisory Committee of the university and the Medical Curriculum Committee of the college of medicine consider the possibility of establishing a program.

The purpose of this program would be to assist the transition between premedical and medical education at the University of Vermont. The committee in making its proposal pointed out the following advantages of the program:

The student would be able to mature in some of his liberal arts subjects without losing time and while concerning himself with some of his medical studies.

It would also dramatize the medical college faculty's acceptance of the relevance of undergraduate to medical education. Hopefully, some of the students would develop interests in a career in the basic medical sciences.

The possibilities of students specializing too soon and neglecting their liberal arts courses were feared by the committee.

The committee also recommended weekly, informal dinner meetings to be held with selected faculty members of both the arts and the medical faculties.

At this point it should be stressed that the college of medicine is on the university campus, and travel between classes in the brief periods allotted is no problem.

Selection of students

The six students were selected by the Admissions Committee of the college of medicine in consultation with the Premedical Advisory Committee on the basis of a personal interview and their desire to participate in the program, their academic qualifications, (they were not superior students), and the absence of serious conflict between scheduled classes in the arts college and scheduled classes in the college of medicine. Parenthetically, a few minor conflicts did occur, but the medical and arts departments involved cooperated by excusing students alternately from the few conflicting hours.

The distribution of the courses taken by the special students is given in Table I.

Observations

The initial concern in setting up the program was the absence of any specific means for evaluation of the results. We eventually decided that we would urge our medical sociologist to work on the possibility of an evaluation plan when he arrived during his first year of the program. However, the number of students involved was so small that any objective evaluation was considered to

TABLE 1

Distribution of Academic Courses Taken by Special Students

Psychology	11
Development of Science	5
Sociology	4
Philosophy	3
Literature	2
Art	1
Physical Education	1

TABLE 2

Combined Student Program

Percentage Grades—Student "A"

Pre-Program		*Program*	
Freshman	79.5	Anatomy	90.0
Sophomore	83.5	Histology	80.0
Junior	84.2	Neuroanatomy	87.0
3 yr. av.—liberal arts	82.3	Psychobiology	90.0
M.C.A.T. Percentile Science Information	50.0	1 yr. av.—major medical subjects	85.7
		1 yr. av.—liberal arts	82.2

TABLE 3

Combined Student Program

Percentage Grades—Student "B"

Pre-Program		*Program*	
Freshman	(TFR)	Anatomy	86.0
Sophomore	91.3	Histology	84.0
Junior	91.4	Neuroanatomy	85.0
3 yr. av.—liberal arts	(91.4)	Psychobiology	90.0
M.C.A.T. Percentile Science Information	50.0	1 yr. av.—major medical subjects	85.0
		1 yr. av.—liberal arts	87.7

TABLE 4

Combined Student Program

Percentage Grades—Student "C"

Pre-Program		*Program*	
Freshman	84.6	Anatomy	86.0
Sophomore	86.7	Histology	84.0
Junior	88.7	Neuroanatomy	84.0
3 yr. av.—liberal arts	86.8	Psychobiology	85.0
M.C.A.T. Percentile Science Information	15.0	1 yr. av.—major medical subjects	84.7
		1 yr. av.—liberal arts	84.0

be probably worthless. We decided we would observe and see what happened.

Two simple events stand out. One man resigned from the program because he became, among other things, disillusioned about medicine and wanted to pursue advanced studies in chemistry. Although his work in gross anatomy was poor during the first quarter, his performance simultaneously in the department of chemistry in the undergraduate college was superior.

The second fact is that with this one exception the remaining five men maintained a good B average in the medical and the arts colleges. In addition, the level of their marks was almost identical with that which they had achieved in their prior college years. This is shown in Tables 2-6.

While all of the students had a good college background, B average or better, only one had an exceptional record, but it will be noted that when abilities were measured by other indices, such as the College Scholastic Aptitude Test, (ACE), and the Medical College Admission Test, (MCAT), differences between students became more marked. (Table 7)

Personality evaluations were made by a group of observers. The majority of the judges rated one student, "C," only average in emotional stability and effectiveness of expression.

Student "A" was rated as average in all categories although at least one rater thought that he was below average in his interest in courses, initiative and industry. In addition, a year earlier, the Premedical Ad-

TABLE 5

Combined Student Program
Percentage Grades—Student "D"

Pre-Program		*Program*	
Freshman	88.6	Anatomy	89.0
Sophomore	84.7	Histology	83.0
Junior	79.5	Neuroanatomy	85.0
3 yr. av.—liberal arts	84.0	Psychobiology	85.0
M.C.A.T. Percentile Science Information	7.0	1 yr. av.—major medical subjects	85.7
		1 yr. av.—liberal arts	87.2

TABLE 6

Combined Student Program
Percentage Grades—Student "E"

Pre-Program		*Program*	
Freshman	80.0	Anatomy	91.0
Sophomore	81.0	Histology	89.0
Junior	88.8	Neuroanatomy	85.0
3 yr. av.—liberal arts	82.9	Psychobiology	80.0
M.C.A.T. Percentile Science Information	40.0	1 yr. av.—major medical subjects	88.3
		1 yr. av.—liberal arts	86.0

TABLE 7

Aptitude Measures on the Special Students

UVM 1st yr. Aptitude Test		MCAT—Weighted Score (3rd yr.)			
Student	*Percentile Rank*	V.A.	Q.A.	M.S.	S.I.
"A"	94	615	555	495	495
"B"	94	695	625	585	505
"C"	49	435	535	515	385
"D"	37	435	495	445	355
"E"	12	415	385	405	475

(500=50 percentile)

visory Committee had felt that this student was personally immature.

Of the five students four had majors in psychology, and the fifth stated at the end of the year that he wished he had majored in psychology also. Two of the students spent the summer working in a State Hospital for the Insane and three at least are considering a career in psychiatry or general practice with a psychiatric slant. However, these notions existed prior to their entrance upon the program and apparently were not altered by their experience during the year.

Recent well-known and widespread trends among medical schools to stress liberal educational preparation for medicine may have affected the thinking of the students. In addition, at this university the student grapevine carries the unproven information that psychology majors are successful in gaining admission to this country's medical schools.

One of the initial concerns of the group of faculty involved was that the students would neglect their liberal arts couses and concentrate on the medical courses. It is evident that this did not happen, although the current year of the program will be of more interest in this regard because physiology and biochemistry are reputedly difficult courses among the students. (The first quarter marks as of the date of this writing also show adequate performance of the special students in the subjects mentioned.)

The faculty members in the medical college who observed the students as a group considered them to be not significantly different in attitude or maturity from their classmates.

The students did not select their arts courses to avoid work but they volunteered the information that participation in the advanced arts courses represented a welcome relief from the feeling of being amateurs in the college of medicine. Their performance in these arts courses was adequate, as demonstrated by the tables.

The students met with selected members of the administration and the faculty of the arts college and the college of medicine each Monday evening for a dinner and an hour's discussion. As one of our colleagues said about this, "The students are very fortunate to enjoy this privilege." Considering the rate of attendance of faculty members, it was apparent also that they, too, considered this informal exercise a privilege. The dinners gave some concern as did the title, "special students," because it was feared that these students would feel too special and possibly not take their obligations seriously. Apparently this is not the case.

Our first experience with the Monday dinner meetings was a lively

discussion between the members who attended as to whether these meetings should be structured or not. Some felt that an agenda was important. Others felt that spontaneous conversation would be more productive. The question was never settled, but the meetings were spontaneous and no agenda was provided. Occasionally a question would come up at one of the meetings and the students would suggest that a specific member of the faculty should be invited to attend the next meeting so that the discussion of the question could be continued in his presence. For example, the professor of philosophy was invited after we were unable to resolve a question posed by the associate professor of English who asked, "What is a fact?"

Embarrassment existed on the part of both the faculty and students. The students were quiet at first and the faculty talked too much, probably for fear that the meeting would become too silent. The relation between faculty and students eased as time went on and occasionally students would dominate the conversation by questions. The talk frequently turned to medical practice, and the students and nonmedical faculty occasionally put the medical faculty on the defensive.

The students would bring up questions and seek the opinion of both medical college and liberal arts faculty. The discussion benefited faculty members because they were placed in the position of hearing the opinions and attitudes of their peers in the other college. For example, one discussion revolved around the need of repeated medical histories on hospitalized patients, i.e. the history taken by the intern, resident, attending and student. When the reasons for the complicated procedures were described the students and arts faculty seemed quite sympathetic, and one had the feeling that more explanation of the medical routine would be useful.

As time went on the students did not defer to the medical people but frequently sided with the arts faculty on controversial questions.

The student who dropped out of the program gave the impression during the early dinners that he was somewhat cynical. He later reported to the dean of the college of medicine that the dinners in part had served to disillusion him about medicine as a career.

Our sociologist, in interviewing the students, reports that several of them later mentioned that new vistas in medicine largely social and psychological had been opened for them, although most of the medical men who were invited to the meetings were not psychiatrists.

From the students' point of view the advantages of the program were quite clear. It assured them of their apparent educational goal, i.e. admission to medical school, thus obviating the uncertainty of application during the last year of college. They all felt that the program eased the transition between college and medical school. They spoke of enjoying a more leisurely humanitarian pace of college. As one student put it, "The other fellows are under so much pressure (in medical school) that all they can do is memorize the assignments they get. We are able to stop and figure things out. When you begin to ask 'why' you can really begin to get interested in the relationships you are working with." Perhaps with the enthusiasm of one who wanted to express his pleasure with the program, he felt that his whole attitude toward academic work had changed during the present year for he also emphasized that be-

ing in medical school makes one "grow up."

Another student stated, "It helps the mediocre student over the hump." Others found real educational value in the program. Two felt that their medical college interests tied in with and vivified their college courses, although they found little direct relation between their arts courses and those in medical college. Some felt that in phasing the medical courses, i.e. anatomy first, they would be helped in subsequent first year courses such as physiology. Apparently they did not feel the pressure which the average first year medical student experienced. On the other hand, they were all on the way to their goal because they were taking medical school courses. They did object slightly to being somewhat apart from their undergraduate college classmates inasmuch as they could not participate in commencement exercises. They wondered whether they would be unused to the rigors of the second year because of their modified curriculum. Some worried about the experiment in that it might reflect on them if they did poorly or if they tried to transfer to another medical school. Still others fretted about their regular first year medical confrères. By the end of the year most of them felt that they had been accepted by their medical school classmates as peers but their premedical activities such as fraternity participation became less important.

In summary it can be said that:

1. The program definitely eases the pressures of the freshman year in medical college on its participants and to this extent makes it possible for them to broaden and deepen their attitudes toward their educational experience.

2. The program, through the weekly dinner meetings, has allowed the inter-stimulation between faculty and students in a manner not ordinarily possible.

3. It has also brought together members of the faculties of arts and sciences and medicine in a situation which potentially can bring the insights of each into productive relationship with the other.

Integración del último año de College con el primero en la Escuela de Medicina

En relación con el proyecto de establecer un Departamento de Medicina Preventiva, algunos miembros de la Facultad de Medicina de la Univ. de Vermont se ocuparon del problema de lograr una preparación adecuada de los estudiantes de Medicina en lo que se refiere a nuevos conceptos en el tratamiento médico. Después de muchas discusiones, se decidió que el mejor modo para alcanzar ese fin sería extender el estudio de las Artes Liberales tanto como fuera posible, sin alargar el período de estudios requerido para obtener el título de M.D., y se estableció un programa de enseñanza según el cual se permite a los estudiantes de último año de *College* seguir determinados cursos del primer año de la Escuela de Medicina (Histología, Anatomía General, Neuro-Anatomía y Biología). El modo en que fué llevado a cabo dicho programa, primero, en forma experimental, con 6 estudiantes seleccionados del *College of Art and Sciences* de la Univ. de Vermont, está descrito detalladamente en este informe, donde discute el autor (Decano y Prof. de Medicina Clínica de la mencionada Escuela) los resultados que produjo ese experimento, así como ciertos problemas que surgieron. Estas son, en resumen, sus conclusiones: 1) El programa ha logrado aliviar definitivamente la excesiva presión que suele sufrir el estudiante de primer año de Medicina, ayudándole además a ensanchar considerablemente su horizonte y a crear en él actitudes deseables hacia los objetivos de su educación; 2) gracias a unas cenas semanales, en las que, de acuerdo con dicho programa, se reunen miembros de la Facultad y estudiantes, se estableció un libre intercambio de ideas entre ambos grupos, y, 3) también se creó una relación fructífera entre miembros de la Facultad de Artes y Ciencias y los de Medicina.

Presented at the 67th Annual Meeting
Association of American Medical Colleges
November 12-14, 1956

The Teaching of Comprehensive Medicine at Temple University School of Medicine and Hospital

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IT HAS BEEN evident for sometime that specialization—which means fragmentation—has needed to be supplemented by integration. From this arose comprehensive medicine. This paper describes the evolution of the comprehensive medical program at Temple University School of Medicine.

This teaching of comprehensive medicine began four years ago with a course for senior medical students during their one-month clerkship in the general medical clinic. Each student (or pair of students) analyzes a patient from the medical, psychological, social and economic standpoint; then synthesizes the findings into a broad picture; and formulates a definite plan of management for this patient. During the month's clerkship the group of 14 students attends 16 hours of conferences devoted to the analysis of these patients and their problems.

Selection of the patient for intensive study is made by students and staff, and approved by a full-time medical clinic director. An attempt is made to select patients not in their senium and having minimal economic resources. Such patients have ranged from a 63-year-old man with angina and claudication who is anxious and depressed, to a 15-year-old boy with narcolepsy. It is a striking commentary on the patient population of medical clinics that such comprehensive studies disclose that 13 per cent of the patient-group studied is either psychotic or borderline.

The short duration of this contact keeps student morale and interest at a high level and the only persistent student complaint has been that the clerkship doesn't last long enough! As a matter of fact, out of the success of this senior course has grown the integrated four-year program in comprehensive medicine which is currently operative.

Three years ago the department of obstetrics-gynecology requested that such a course be established for the juniors during their clerkship in the gynecology clinic. This course is similar in organizational detail to the medical clinic course but, naturally,

deals with such problems as infertility, frigidity, dysfunctional bleeding, habitual abortion and so on. The following year this course was transferred to the senior year for a six-week clerkship. Thus both the medical and the gynecological clinics have comprehensive programs in the senior year.

However, it soon became evident that students needed experience in long-term contact with chronic patients. Thus three years ago, every Saturday morning was scheduled in the junior year curriculum for the comprehensive medicine group. The General Practice Clinic was organized to provide each pair of junior students with two chronic patients whom they analyze holistically and manage during their entire junior year, seeing the patients in clinic on Saturday mornings. Each student participates in 15 hours of small group conferences regularly scheduled throughout the year as well as individual supervision of his patients on their return visits. In all the courses described, home visits are mandatory. Moreover, the junior students are required to be available for emergency calls to the patients' homes.

The patient population, assigned to junior students, tends to be elderly public assistance patients but varies widely: a patient with incurable carcinoma of the lung—an ambulatory psychotic—a teen-aged epileptic white girl with an increasing number of seizures.

This junior course has become a first-hand experience with many of the discouraging realities of medical practice. Thus when the students through their student AMA publicly commended the course last year, we were more than pleasantly surprised, for while we expected the course to be valuable we didn't expect it to be popular.

Students' attitudes

While these courses brought about evident changes in student attitudes toward the person of the patient, it was observed that students experienced much anxiety in dealing with personalities and emotion, with the incurably diseased and disabled, and with patients who might and who do die. Some evidences of this anxiety are as follows: (1) students who study the patient's chart interminably while finding the courage to see the patient. (2) the student enters the examining room with his patient, immediately comes out looking for a blood pressure apparatus, etc. (3) students who show obvious relief when their patients fail to keep a return appointment. (4) students who deny (ostrich-like head in the sand) that the patient has any problems; or assert vigorously that they could be of little benefit to the patient.

This student anxiety was handled in two ways: (1) By open and understanding discussion with each student group of student insecurity and their rationalizations of it immediately before seeing patients; (2) By the development of a 16-hour lecture course in the sophomore year dealing with the student-patient relationship.

This course deals with such things as the problems and concerns of students in interviewing and managing patients in a professional manner, the student's position within the hospital hierarchy, reasons why patients go to physicians, the scientific analysis of the doctor-patient relationship, and so on. Consequent to these forewarn-

ings, student anxieties and resistances have diminished.

Having gone this far successfully, this approach was expanded into the freshman year to include comprehensive correlation with the basic sciences. This year 16 hours of already existing correlation conferences in the freshman curriculum and a like number in the sophomore were assigned to comprehensive medicine. In conjunction with the preclinical departments the students are now exposed to the patient as well as his disease.

Thus freshman students studying osteology are shown a 14-year-old boy with a slipped femoral epiphysis who has a Fröhlich-like habitus. Interviewed before the students, he reveals—even proclaims—that he is the baby of the family, that shortly after his birth his father had died and his mother had gone to work, that he lacks ability in sports. He is witty and exhibitionistic; his name is Donald Felix and, obviously, he is called "Felix the Cat" by his boyfriends! The implication of these factors in understanding the etiology of his obesity and his disease and in his management during six-weeks confinement in a cast—all these are mentioned and importantly, the philosophy of understanding the person is introduced.

During microbiology the problem of a child with polio is a subject of discussion, not only the virus and the disease but also the problems of the family doctor in handling the panic of the child's family when he makes the diagnosis. The concept of the early rehabilitation of the child in introduced.

Teaching concept

In brief, our teaching concept is that the interaction of an environmental stress with a particular personality or host results in disease or dysfunction. Thus environmental ragweed pollen plus an allergic individual equals hay fever. In like manner the exit from the home of the children who have grown to adulthood constitutes environmental stress, which, added to the specific personality of the martyr mother, may result in depression. The treatment of disease then consists of alteration of the environment or alteration of the individual, or both. Obviously, in ragweed hay fever environmental alteration consists of sending the patient to an area of low-pollen count, whereas desensitization alters the individual. In the case of the depressed martyr mother, effecting a change in the basic character pattern of the individual would be difficult, long-term and probably impractical. On the other hand, environmental alteration by diverting the patient into charitable activities, by channeling her masochistic energies into volunteer work, will often result in a lifting of the depression.

Integrated teams

Social workers deal chiefly with the environmental alterations, while psychiatrists attempt personality adjustments. For this and other reasons, all our clinical teaching is performed by integrated teams of psychiatrist, social worker and internist or gynecologist in small group conferences in a round-table student-participating manner. This provides a setting in which the environment, psyche and soma are all considered and simultaneously rated according to the individual case. We believe this approach provides a blueprint for the student in his do-it-yourself learning experience.

In some other comprehensive clin-

ics we have seen, we have been impressed with the need for more adequate integration with psychiatry. In these the clinical approach is often dominated by organically oriented internists whose approach is: Rule out the organic first! Only later is the psychiatrist consulted, but even then management of the patient is the primary responsibility of the internist alone. The psychiatrist of these clinics appears to be a side-line coach rather than a full-fledged member of the management team. It is our distinct impression that the use of integrated teams of teachers at Temple University is significantly responsible for any success we have had.

It is evident, then, that beginning four years ago with a short course in the senior year the comprehensive medicine program has now evolved into a freshman through senior four-year effort, coordinated over-all by the internist-psychiatrist-social worker team of comprehensive medical teaching personnel. The team approach has resulted to date in significant changes in student attitudes. For example, the term "crock" has disappeared from the student vernacular. The medical clinic with its high percentage of functional problems is considered by the students one of the most satisfactory senior year services.

Students are no longer satisfied with the final diagnosis of "functional" but are interested in dynamically understanding why the patient has functional disease. Whereas at one time students classified only those cases as "good" that had outstanding organic diseases, they now apply this term to interesting psychological problems as well.

Needless to say, staff attitudes also have been altered and certainly a higher degree of interdepartmental communication now exists. Correlation conferences including for example, an anatomist, a surgeon, an internist, and a psychiatrist all contributing significantly to the total picture of the patient and his disease, are bound to be broadening to staff as well as students.

A further evidence of the acceptance of this program at Temple is the fact that this year both the departments of obstetrics-gynecology and medicine requested that all patients entering their respective clinics should be comprehensively evaluated.

Time involved

One of the problems in doing this is the time involved. Thus in gaining the broad understanding of the person, the examiner often does have to spend more time with the patient per visit, at least for one to three visits. However we are convinced that gaining such an understanding, spending this time, will pay dividends in the long run by shortening the total disability time, the total number of clinic visits, and the total hours of patient and doctor time. We are convinced of this for one reason, because Dr. Edward Weiss and one of the authors (A.V.H.) studied a number of clinic charts of patients whose only qualification was that the chart weighed one pound or more. Most of these patients upon study had significant, but hitherto unrecognized, problems in the social and emotional fields. As Dr. Weiss says, "Everyone talks about the high cost of psychiatry. These charts and patients illustrate the high cost of non-psychiatry!"

Some schools have answered this problem of the time that initial interviewing takes by having two

medical clinics; one comprehensive, detailed and personal, the other swift and less personal. We might polarize these as "ideistic" and "pragmatic." The schools, of course, are well aware of the undesirability of having two levels of medical care.

We are proposing* as a further step in our program the establishment of a single comprehensive medical clinic wherein students would be supervised, not by internists alone or in consultation with a social worker or a psychiatrist, but by the same integrated teams we have used in teaching.

This should now be feasible since we have new and expanded clinic facilities with adequate space for individual student offices, with specialist consultants available in the same building and, most important, with a growing nucleus of trained teaching personnel.

It is proposed that in this comprehensive medical clinic new patients would be assayed from all angles: biologic, sociologic and psychologic. The patient's disease and his disability would be delineated and a precise plan of management formulated. This data would be placed on the top sheet of the chart, signed by the student and the team, and would constitute clinic policy unless changed by the addition of another signed management sheet.

The chart of any patient who returns for 10 visits will automatically be pulled and reviewed by the directing clinic team in conference with the personnel managing the patient.

This should allow for greater insight into the problems of medical clinic patients, a uniform approach to all such patients, as well as research in management methods. It should keep patients off the clinic merry-go-round and prevent some long-term disability and iatrogenic dependency. It also provides for a continuing check on and education of clinic personnel. Moreover, it provides a real test of the student's knowledge and application of comprehensive medical principles. It measures this not in terms of student attitudes but in terms of the results he gets with his patients.

In conclusion, the cumbersome term "comprehensive" will someday in the future be dropped for all *good* medicine will be comprehensive. This will occur when as someone recently said, "We have humanized the scientists and 'scimonized' the humanists!"

*Since this paper was originally presented the following proposals have been put into effect, supported by a generous grant from the Commonwealth Foundation.

La enseñanza de Medicina Comprensiva en Temple University

Iniciada hace 4 años con un breve curso (de un mes) para estudiantes de cuarto año, la enseñanza de la Medicina Comprensiva en la Escuela de Medicina de *Temple University* ha sido desarrollada en ese período considerablemente, abarcando hoy un programa de 4 años, el cual incluye desde estudiantes de primero hasta los de último año. Dicho programa se lleva a cabo bajo la supervisión de un equipo integrado por médicos internistas (o ginecólogos), psiquiatras y *social workers* (empleados de la Asistencia Social). En la composición de este equipo hay que destacar, según señalan los autores del presente informe, que el psiquiatra desempeña, a diferencia de lo que suele ocurrir en otras Escuelas, un papel no menos importante que el del internista o del *social worker*, un factor que se cree contribuyó mucho al éxito que ha tenido el programa de enseñanza. El modo particular de funcionar ese programa, que es descrito detalladamente, trajo consigo una colaboración estrecha entre los diferentes Departamentos de la Escuela, cuyos miembros tienen la oportunidad de intercambiar opiniones frecuentemente al asistir a conferencias y discusiones regulares entre instructores y estudiantes, las cuales son parte del curso de Medicina Comprensiva. Otro resultado benéfico que produjo esta enseñanza,

son ciertos cambios en la actitud de los estudiantes, como, por ejemplo, el hecho de que éstos, por lo general, ya no se quedan satisfechos después de haber diagnosticado una enfermedad "funcional", sino que se esfuerzan en comprender sus causas, inclusive posibles causas psicológicas, cuya investigación antes solían evitar. Como próximo paso en el desarrollo del dicho programa en *Temple University*, se anuncia el proyecto de establecer una Clínica "comprensiva" especial, cuyo plan de funcionamiento se describe detalladamente.

* * *

Separatas de este artículo, en español, podrán obtenerse si son solicitadas por un minimum de 25 lectores.

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August 1
1957-58 edition
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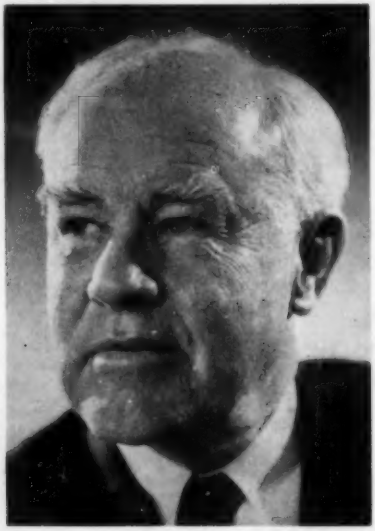
Editorials and Comments



ALAN GREGG

DR. ALAN GREGG, vice president of the Rockefeller Foundation and for many years director of the Division of Medical Sciences, died recently in Big Sur, Calif. His passing at a time when he had laid down the burdens of his position for a retirement of writing and consulting, will call forth in many of us cherished memories of our acquaintance with this gifted and remarkable man.

After graduation from the Harvard Medical School in 1916, and service in the Royal Army Medical Corps, he joined the Rockefeller Foundation. From 1922-1928 he was associate director, Division of Medical Education, with the European area as his major interest. From 1930-1951 he was director, Division of Medical Sciences, in which position he had unique opportunity (of which he took admirable advantage) to influence medical education in the world.

The importance of full-time faculty in clinical departments was constantly supported by Alan Gregg. Through grants from the Foundation and the Welch Fellowships he made money available to implement his opinions.

Alan Gregg was a prime mover in the emergence of psychiatry as a major discipline in medical education and medical research.

A concern for all factors relating to health and disease led to a role in the expansion of preventive medicine. Anyone who attended the Teaching Institute on Preventive Medicine at Colorado Springs in 1952 will remember Alan Gregg's challenging statements on the importance and responsibilities of the field.

Alan Gregg influenced medical education around the world to a degree unequalled by any other individual. Various countries have had their leaders—Alan Gregg was a world leader. His loss will be felt as keenly in India, Japan and France as in the United States—not because of what he gave of the Rockefeller Foundation, but of what he gave of himself.

I remember following him around India in 1952 and finding on every desk Dr. Gregg's report on Indian medical education and his words of advice on every dean's tongue. When I reported to his New York office on my return, I told him that I had felt like a follower of a Mahatma—and this of course reminded him of several stories!

Who could ever have known Alan Gregg without remembering his stories, his limericks, his turns of phrase? He had an amazing capacity for self-expression which brought the outflow of his keen and penetrating mind to ears that could never forget it. The mind and the tongue make Dr. Gregg the most quoted man in medical education today. He knew the power of being able to say things well.

Alan Gregg felt that one of his missions in life was to express to the layman the value of great medicine and the need to support it adequately. The growing awareness of this need on the part of the medical profession, industry and the Federal government must be attributed in significant measure to the speeches and articles of Dr. Gregg.

His work with the Federal government included in recent years membership on the Hoover Commission and the Rusk Committee. He was the first Chairman of the Advisory Committee for Biology and Medicine of the U. S. Atomic Energy Commission and was particularly forceful in assuring that research of a nonmilitary nature would be included in the program.

His long association with the Peking Union Medical College and other schools in the Orient made him a valued member of the China Medical Board.

It is not possible nor intended here to document the many contributions and activities of Alan Gregg. What he did for medical education needs no monument for he will walk through medical schools for many years to come. *John Z. Bowers, M. D.*

The World Medical Association Appeal

THE U. S. Committee of the World Medical Association, which at present numbers 5,000 members, is engaged in a promotional campaign to increase that membership to 10,000 during the current year.

As evidence of the usefulness of this international organization the following activities are listed[1]: the formulation of an International Code of Medical Ethics and modified Hippocratic Oath defining the ideals and obligations of physicians; the development of a statement setting forth the basic principles that must be observed if the rights and status of physicians are to be properly protected in any government social security scheme; defense of the rights of the medical profession in dealing with "attempts by various nonmedical organizations to draft a code of

1. "The World Medical Association Needs You," World Medical Association. Office of the Secretary, 345 East 46th Street, New York 17, N. Y. June 1957.

international medical law;" providing "solidarity and strength by bringing physicians together for the solution of their common problems;" sponsorship of the First World Conference on Medical Education in London in 1953 (and planning the second such conference for Chicago in 1959); promotion of international exchange of students and teachers; development of an international program to improve occupational health services; urging removal of unwarranted trade restrictions and arbitrary licensing requirements on proven therapeutic agents in all countries where such restrictions or requirements exist; formulation of plans for a central repository of medical credentials ("to enable qualified physicians of every country to file proof of their identity and qualifications with a safe and authoritative international source;") conducting studies of such "subjects of world-wide interest to physicians as postgraduate medical education, hospital facilities, cult practices, medical advertising, and the effects of social security legislation on medical practice."

The benefits to the individual of membership in the U. S. Committee include: the privilege of attending World Assemblies of the WMA as an official observer; the receipt of the six copies a year of the "World Medical Journal;" the help of the WMA Secretariat in contacting medical leaders and teachers abroad, and in making arrangements for foreign travel.

The dues of active membership in the U. S. Committee of the World Medical Association are $10 a year. Certainly the activities of WMA are such as to warrant the hope that at least 10,000 U. S. physicians will be willing to provide support through annual membership in the U. S. Committee. D. F. S.

New Help for an Old Problem

"MY STUDENTS are pretty good with a stethoscope when they finish my course in physical diagnosis in the second year, but when I get the same students in the third year on the wards, what they hear through the stethoscope is all Greek to them again."

The above is one of the commonest complaints voiced by medical educators. It appears to be almost a universal experience and probably for a number of very good reasons. The sounds heard through a stethoscope *are* often complex and difficult to interpret; the fragile sound images which the student memorizes in his physical diagnosis course in his second year are frequently dimmed or lost as the result of lack of refresher experience through the summer vacation period. The feeling of responsibility for the diagnosis on his own patient often leads to the arousing of doubts in the third year student which would rarely occur to the mind of the second year student.

But aid is definitely in sight for our hard working, highly motivated but self-admittedly unsuccessful instructors in physical diagnosis. Through the simultaneous use of the stethoscope to hear the heart sounds or murmurs, and the oscilloscope (a modification of the radar scope developed in World War II) to visualize these same vibrations as they are produced by the heart, sound images are so sharply recorded in the memory of the student that retention is the rule rather than the excep-

tion.[1] The introduction of magnetic tape recording after the war also has made it possible to record with ease and quite satisfactory fidelity the heart sounds and murmurs so that they can be reproduced just as they are heard through the stethoscope and can be played back to the student just as often as he wishes to listen to them.

These new devices Butterworth reports "have entirely changed our concept of the teaching of cardiac auscultation . . . we can now teach with confidence, in that the student is aware of and appreciates the more difficult auscultatory phenomena. This confidence has developed from the testing of a large number of physicians at different stages of training with 'unknown' recordings on tape before and after different teaching methods. It has become clear that it is now possible, in even a few hours, to develop the auditory acuity of physicians in the perception of heart sounds in a way that we did not believe possible. It should now be relatively easy to advance the auscultatory ability of the senior medical student to the point he would formerly have reached after a residency in medicine and the resident can be advanced beyond the attending physicians."[1]

Those persons who attended the 1950 Annual Meeting of the Association of American Medical Colleges at Lake Placid will remember the demonstration of the Educational Cardioscope which Dr. Butterworth conducted there. This instrument shows simultaneously the stethogram and electrocardiogram (or combinations of the two) while a group listens to the heart sounds through individual electronic stethoscopes. A tape recorder at the same time makes a permanent recording of the heart sounds and murmurs.[2]

It is certainly encouraging to note that devices are now generally available that will make it possible for students to learn to recognize murmurs associated with the various types of cardiac lesions just as accurately as they learn to recognize a palpable spleen or an exophthalmus. D. F. S.

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1. Butterworth, J. Scott: "Auditory and Visual Perception of Cardiac Vibrations," Circulation, Vol. XV, No. 4, April 1957.

2. Butterworth, J. Scott; Chassin, Maurice R.; McGrath, Robert: "Cardiac Auscultation Including Audio-Visual Principles," Grune & Stratton, New York and London, 1955.

NEWS DIGEST

SCHOLARS FROM Italy, Indonesia, Germany, Jamaica and Formosa.

Conference for Foreign Medical Scholars

JOHN Z. BOWERS

With the generous support of a grant from the China Medical Board, a Conference on Medical Education for Foreign Scholars in the Medical Sciences was held at the University of Wisconsin Medical School, June 23-26, 1957. The Association of American Medical Colleges and the Conference Board of Associated Research Councils were co-sponsors.

The following countries were represented: Australia 2, Brazil 1, United Kingdom 4, Chile 1, China 1, Columbia 3, Costa Rica 1, Denmark 1, Egypt 1, Formosa 1, Germany 4, Greece 1, India 3, Indonesia 2, Italy 1, Jamaica 2, Japan 5, Korea 1, Mexico 1, Netherlands 2, Norway 1, Paraguay 1, Peru 1, Philippine Islands 1, Thailand 2. Since the Conference was experimental in nature, attendance was restricted to 50 scholars nominated by the Fulbright program, the China Medical Board, the Rockefeller Foundation, the Kellogg Foundation and the Department of Health, Education and Welfare. Dr. Robert Parkin, coordinator of postgraduate medical education at Wisconsin, was responsible for the planning and operation of the Conference. Miss Elizabeth Lam of the Associated Research Councils was an invaluable associate.

The 50 foreign scholars were joined by 16 Medical educators from the United States who led the group discussions and presented the major addresses.

The program was developed around the following six topic areas each covered by a major discussant followed by small group conferences:

The Philosophy of Higher Education in the United States—Hennings Larson, Ph.D., vice president and provost, University of Illinois.

The Education of a Physician in the United States—Edward Turner, M.D., secretary, Council on Medical Education and Hospitals, American Medical Association.

Evaluation of the Applicant for Medical Education—Robert J. Glaser, dean, University of Colorado Medical School.

The Organization and Objectives of a Medical School—Robert F. Schilling, associate professor of medicine, University of Wisconsin Medical School.

The Development of the Medical Curriculum—John Z. Bowers, dean, University of Wisconsin Medical School.

Recent Trends in Medical Education—T. Hale Ham, professor of medicine, Western Reserve University Medical School.

Several of the papers will be published in subsequent issues of the Journal of Medical Education. A supplement for overseas distribution is in development.

Obviously, the success of such a conference depends upon a healthy give and take between participants. It was heartening to see this develop as the conference proceeded. Medical educators from other countries were willing to stand up for their own systems and to point out advantages over methods used in the United States.

Preparation for medical education and the selection process received considerable comment from the participants.

There was general agreement by the participants that the opportunity to exchange ideas on medical education across the world had been an enriching experience.

Heart Association Awards

The American Heart Association has announced the largest single group of research awards in its history—225 grants-in-aid totalling $1,395,285.80. The new grants raise to almost $2,375,000 the sums allocated by the Heart Association to support scientific studies related to the heart and blood vessel diseases during the twelve months ending June 30, 1958.

Resignation of Civil Service Medical Chief

Dr. Verne K. Harvey, who set up the Civil Service Commission's medical division and has served as its medical director for 17 years, left the agency June 28. The following week he began a three-month orientation course at Mt. Alto Veterans Administration hospital in Washington before becoming professional services director at the two Indianapolis VA hospitals.

American Foundation for Allergic Diseases Awards

The American Foundation for Allergic Diseases announced awards of $500 quarterly or summer scholarships to 20 medical students from approved medical schools throughout the United States and Canada to encourage young students to broaden their knowledge in the field of the allergic diseases by research and clinical training.

These awards were made possible by a grant from the Gustavus & Louise Pfeiffer Research Foundation.

College Briefs

Baylor

Four new professors have been named to the faculty. Dr. JAMES P. FERGUSON and Dr. JOHN VAUGHN were appointed assistant professors of pathology; Dr. IRVIN A. KRAFT was appointed an assistant professor of psychiatry and Dr. M. HERBERT NATHAN has been appointed an assistant professor in the department of radiology.

The departments of anatomy and biochemistry recently received $80,000 from the Public Health Service to further their research programs. Half the sum was designated for equipment and remodeling during the first year, with the remaining amounts to be used for traineeships and summer fellowships to supplement the present program. An additional $37,800 will be granted for the two subsequent years.

Cincinnati

Dr. DONALD J. LYLE, professor and director of the department of ophthalmology, has returned from a month of lecturing before British medical groups. By invitation, Dr. Lyle delivered the Moynihan lecture before the Royal College of Surgeons of England in London, spoke before the section of ophthalmology of the Royal Society of Medicine at the University of London, and lectured before a joint meeting of the Scottish Ophthalmological Club and North of England Ophthalmological Society at the Edinburgh Infirmiry.

DR. FRANZ ALEXANDER, has been appointed part-time visiting professor of psychiatry, effective July 1. Dr. Alexander has been director of the Mt. Sinai Hospital Psychiatric and Psychosomatic Research Institute at Los Angeles.

Another addition to the university's psychiatry staff during the 1957-58 academic year will be Dr. MARGARET MEAD, New York City. She will serve as part-time visiting professor of anthropology.

Colorado

Dr. REGINALD H. FITZ, assistant professor of medicine since 1953, has been named assistant dean by Dean Robert J. Glaser. His primary responsibilities in the new position will be with student affairs.

Dr. RENE SPITZ has joined the faculty in the department of psychiatry. He was recently named as visiting professor of psychiatry. Since 1940, Dr. Spitz had been associated with the New York Psychoanalytic Institute.

Georgia

Dr. THOMAS FINDLEY, who has been professor of medicine and chairman of cardiovascular research for the Georgia Heart Association, has been named chairman of the department of medicine, effective July 1. Dr. Findley will be filling the vacancy created by the retirement of Dr. V. P. SYDENSTRICKER, who has been professor of medicine and chairman of the department since 1922.

Harvard

Dr. A. BAIRD HASTINGS, Hamilton Kuhn Professor of Biological Chemistry and head of the department of biochemistry, has been named visiting professor of biochemistry at the Australian National University, Canberra. Dr. Hastings will lecture and conduct seminars at the Australian university for a three-month period. He will also lecture in Melbourne and Sidney.

Four clinical professors retired on June 30, to become clinical professors, emeriti. Retiring are: Dr. THOM-

AS R. GOETHALS, obstetrics; Dr. CHESTER M. JONES, medicine; Dr. THOMAS H. LANMAN, surgery and Dr. SAMUEL A. LEVINE, medicine.

Mississippi

Dr. JOSEPH KENDRICK SEALE Jr. has been named an assistant professor of anesthesiology, effective July 1.

New York Medical College

Students, alumni, faculty and trustees paid tribute to Dr. J. A. W. HETRICK, retiring president, by dedicating the main college building to him and naming it Hetrick Hall. The main building is located between Fifth and Madison Avenues at 106th Street in New York City. Dr. Hetrick has devoted more than 40 years to serving the institution in the successive positions of registrar, assistant dean, dean and president.

Dr. RALPH E. SNYDER has been appointed chief executive officer of the college and hospital to succeed Dr. Hetrick. Dr. Snyder was appointed dean in 1953 and will continue in this position.

A chapter of Alpha Omega Alpha was installed at a recent dinner. Dr. WILLARD C. RAPPLEYE, vice-president of Columbia University and dean of the College of Physicians and Surgeons, made the installation address. Dr. WALTER L. BIERRING, national president of Alpha Omega Alpha, presented the charter which was accepted by Dr. Hetrick.

Dr. JEROME S. TOBIS, director of the department of physical medicine and rehabilitation, has been chosen Physician of the Year in New York State for furthering employment of the physically handicapped.

S.U.N.Y. Brooklyn

A new chair in pediatrics has been established to be known as the Frank L. Babbott Chair in Pediatrics. Now retired from medical practice, Dr. Babbott was a member of the Board of Trustees of the Long Island College of Medicine, the predecessor of the Downstate Medical Center, for 20 years. He was also the first president of the Long Island College of Medicine, an office he held from 1931 to 1941. The first man to hold the Frank L. Babbott Chair in Pediatrics will be Dr. RICHARD L. DAY, who has been chairman of the department of pediatrics since 1953.

S.U.N.Y. Syracuse

Dr. CHARLES F. REED has been appointed assistant professor in the department of psychiatry and Dr. ABRAHAM A. LURIE has been appointed assistant professor in the section of anesthesiology in the department of surgery.

Yale

Construction has begun on a new four-story building, housing a $1,000,000 anatomy and biochemistry laboratory. The building will form an extension of the medical school's main building, the Sterling Hall of Medicine. The Public Health Service has contributed $482,000 to the building cost under its Health Research Facilities Construction Program, and the university is providing matching funds to cover the remainder of the cost.

Vermont

The Board of Trustees approved the establishment of separate departments of pediatrics and radiology, these formerly having been divisions of the departments of medicine and surgery respectively, effective July 1.

Toronto

The Rockefeller Foundation has granted the university $110,000 for studies of general medical practice in Canada. This money will be used to extend the Survey of General Practice which is being carried on by the school of hygiene of the university in collaboration with the College of General Practice of Canada. The purpose of this project is to determine the scope of the general practitioner's work and to devise methods of coping with the problems which confront the physician in general practice in this era of rapid changes in the field of medicine.

Audiovisual News

Exhibit of Teaching and Learning Aids In Anatomy[1]

JOHN FRANKLIN HUBER, M.D.*

As a part of the 70th Annual Meeting of the American Association of Anatomists held at the University of Maryland School of Medicine, April 17-19, many interesting teaching and learning aids in anatomy which are not commercially available were placed on exhibit by the individuals who had developed them. There were 65 separate entries, but since quite a few of them included several different items, the total number of aids shown was well over 100. Fifty departments of anatomy were represented. This excellent response to the suggestion that such an exhibit be held demonstrates the deep interest which many anatomists have in their teaching responsibilities.

Since a listing of these teaching and learning aids, the names of the individuals who exhibited them and their university connections, is included in the Proceedings of the Anatomists' Meeting,[1] such a listing is not given here. Instead, a survey of the wide variety of aids put on display is presented below.

Plastic Embedded Material: Brain dissections; Wood's metal casts of the ear; sections of bones showing architecture; cleared embryos showing ossification centers; ¼ inch sections of a 7 - 8 month human fetus; dissections of extrahepatic bile passages and hepatic ducts; typical thoracic nerve; horizontal section of bones of the foot; dissections of the inguinal region.

Wet Specimens: Spinal cord (in a glass tube); dissections of things not dissected in routine laboratory study; cross-sections; cleared embryos showing prenatal ossification.

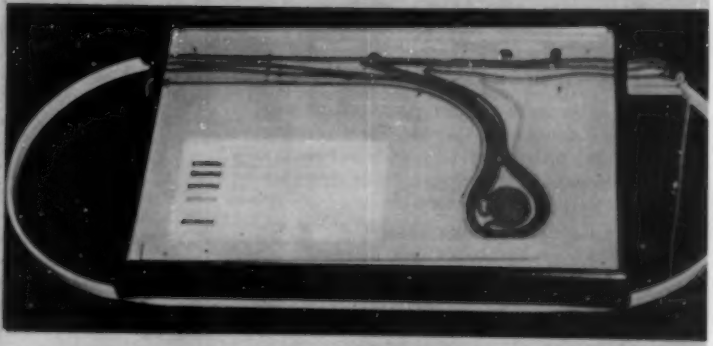
Dried Specimens: Inflated lungs, some with latex injected bronchopulmonary segments, some with areas cut away to show bronchial branching; ileocecal valve and cecum; arteries to a section of jejunum; small embryos; tracheobronchial tree (filled with hard-drying clay); gall bladder and biliary passages (filled with paraffin); shoulder joint cavity (filled with paraffin); renal pelves (filled with starch-plaster mixture); bones of adolescent and adult hands mounted in orientation in plaster; pelves with mountings to show correct standing, sitting and supine positions; bones painted in various ways.

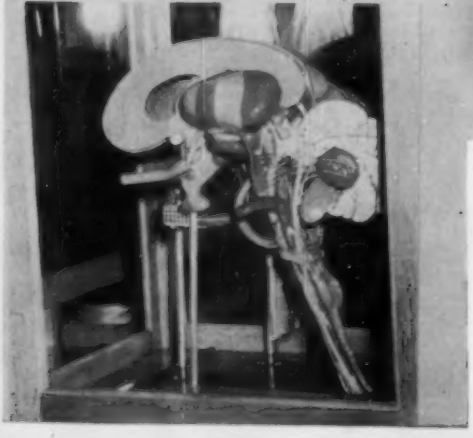
Casts: Metallic cast of ventricular system of brain; reproductions of whole organs by a plaster of Paris technique; acrylic casts of inner ear.

Reconstructions: Wax plate reconstruction of 5mm. pig embryo (mounted so that certain sections could be swung out into view); blotting paper reconstruction of inner ear; pig embryo made of photographic prints of serial sections held together so that individual prints can be examined; solid reconstructions of young human embryos.

1. Proceedings of the American Association of Anatomists Seventieth Meeting, Anat. Rec. 128: June 1957.

*Dr. Huber is professor and head of the department of anatomy at Temple University School of Medicine. The exhibit was organized by Dr. Huber.





Examples of teaching and learning aids exhibited at the 1957 meeting of the American Association of Anatomists. (Photographs by T. A. Burns)

Models Made of Various Materials: Latex (sculptured models cast in latex); metal (fornix of brain sculptured in metal); wire (wires bundled together and then bent apart — tracheobronchial tree, brachial plexus); paraffin (muscles modeled on articulated bones); hard wood (dissectable model of simple columnar epithelium); balsa wood (lungs and liver painted black to use as blackboards); ceramic (nuclei of thalamus); papier-maché (three-foot wide model of pelvis with pelvic diaphragm and fascia); hemp (glued to bones to represent ligaments and tendons); plasticene (muscles of facial expression modeled on skulls); multicolored threads (brachial plexus); plastic and gimp (series of diagrammatic sections of central nervous system with pathways traced out).

Working Models: To show actions of muscle of the larynx; to show movements of a finger; to show movements about the longitudinal axis of the hip joint; to show the coverings of various types of inguinal herniae; to show the development of the mesenteries; to show technique of blocking the trigemial nerve; to show actions of lower extremity muscles.

Diagrams and Charts: Wall charts of several organs; electrified diagram of venous circulation of the brain.

Stereoscopic Material: Photographs of small macroscopic sections of tissues and organs; schemata of the interior of the human brain.

Laboratory Manuals: Neuroanatomy, histology and organology; human embryology; electromicrographs.

Thin Gross Sections Mounted Between Glass.

Electromyographs.

Stills From Motion Picture Films.

Case Histories Illustrating the Application of Anatomical Principles to Clinical Medicine.

Turntable Mount with Plastic Jar Cover for Specimens.

Viewer for Postlecture Showing of Lantern Slides Used in the Lecture.

Ektochromes of Microscopic Anatomy.

Set-Up for Filing Demonstration Microscopic Slides.

New Medico-Legal Film Available

The Doctor Defendant, a 34-minute film, was premiered at the annual meeting of the AMA. This is a companion film to *The Medical Witness* (see February 1957, Vol. 32, No. 2) and is second in a series entitled *Medicine and the Law*.

The series is being produced by The Wm. S. Merrell Company of Cincinnati in cooperation with the AMA and the American Bar Association.

The Doctor Defendant presents the stories of four doctors who find themselves facing professional liability claims. The film also demonstrates how a county society professional liability review committee functions.

Both films are now available from the Medical Audio-Visual Institute as well as from the AMA and The Wm. S. Merrell Company.

Book Reviews

Clinical Urology for General Practice

Justin J. Cordonnier. The C. V. Mosby Co., St. Louis, 1956. 252 pp with illustrations.

The style of this book and the splendid arrangement of the material qualify it for a place in the library of the physician engaged in general practice. Likewise, it is quite suitable for the student of medicine. Proper emphasis is placed on securing an accurate history, stressing particularly the specific items which bear upon the normal or abnormal functioning of the urinary tract and the male genital system. Pertinent items in the physical examination are indicated. The technique of catheterization is omitted, as the author doubtless believes this procedure should be correctly demonstrated and supervised in medical schools. The essential diagnostic and operative procedures are enumerated, although not described in detail. These are left for the complete textbooks on urology. Ample space is given to emphasize divergent opinions concerning management of some urologic conditions.

The chapters are divided into groups of dysfunctions. Namely: "Obstructive Uropathy," "Neoplasms of the Genito-urinary Tract," "Infections of the Genito-urinary Tract," "Renal Failure," "Urinary Calculi," "Neurogenic Bladder Dysfunction," "Senescence," "Fertility and Impotence in the Male," "Injuries of the Genito-urinary Tract," "Female Urology," and "Congenital Anomalies."

This is not intended to be a complete reference work. Many of its 246 pages are devoted to illustrations. These include: Photographs, photomicrographs, and schematic drawings, but the greatest number of reproductions of Roentgenograms. The latter are skillfully used and in several instances are augmented by gross and microscopic views of specimens giving completeness to the subject matter described.

Charles Norfleet, Bowman Gray

Synopsis of Pathology 4th edition

W. A. D. Anderson, M.A., F.A.C.P., The C. V. Mosby Co., St. Louis, 1957. 829 pp with index.

The fourth edition of this well known synopsis of pathology is an expansion of the 1952 edition. The original material has been augmented and the references brought up to date without sacrificing one of the book's greatest virtues, its size and portability. As in the previous editions, the text is designed primarily for use as a compact reference book, a use for which it is excelled by none.

Eleven of the 25 chapters deal with general pathology, the remainder with special pathology arranged by systems. Among the new sections are those covering such recently described diseases as catscratch disease, epidemic hemorrhagic fever, and endomyocardial fibroelastosis. The chapters on the respiratory tract and kidney have been considerably enlarged, and the chapter on poisons has been completely rearranged. The pictures which were excellent in the previous editions have been for the most part retained. There is a new three-page table of histologic stains and their use, which should be invaluable for the medical student studying pathologic histology.

While this synopsis by no means covers the field as do the larger textbooks, it will be most useful to the medical student as a laboratory aid and as a guide for further study, and to the nurse, the dental student and the clinician who requires a familiarity with basic pathology.

Nadya F. Konikov
Washington University

Voluntary Health Insurance in Two Cities

Edited by **Odin W. Anderson,** Ph.D. Harvard University Press, Cambridge, Massachusetts, 1957.

The National Opinion Research Center, University of Chicago, collected and tabulated data in 1953 to determine scientifically the impact of uninsured illness, the effects of insurance on the use of health services and facilities and the average subscriber's wish for more coverage. Financed by the Health Information Foundation, its research director, the author undertook the organization interpreting and reporting the results in this text.

Three insurance programs were studied; Blue Cross and Blue Shield in Birmingham, Ala. and Boston, Mass.,

and the Aetna Life Insurance Company in Boston. About 75 per cent of hospital charges and 62 per cent of surgical charges were covered by insurance. The book presents first, the highlights of the study in three papers; second, the text itself of 60 pages presenting the purpose, interpretations, and implications of the findings; and third, statistical appendices of 85 pages.

To physicians and administrators of insurance agencies this text can be a valuable source of data not elsewhere available. The interpretations made by Dr. Odin Anderson should be of interest to public health officials, social scientists, and both management and labor. To quote from the text: ". . . it would seem that there is still an untapped reserve of personal income that can be channeled in the direction of increased benefits in present day voluntary health insurance, giving a continuing high general economic level." (page 40)

"It would seem clear that there is a stronger desire for insurance which would cover small bills with a significant minority desiring coverage for heavy expenses." (page 43)

The author presents data relative to the effects of a deductible feature on utilization and ability to lower premiums. He discusses the degree of coverage by the several plans and the differences observed in the two areas. "It is reasonable to assume that medical care is affected by changing standards of living," he states.

Vlado A. Getting, *Michigan*

Cardiac Auscultation (Including Audio-Visual Principles)

J. Scott Butterworth, Maurice R. Chassin and Robert McGrath. Grune & Stratton, New York and London, 111 pp.

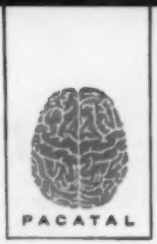
This concise, well illustrated text successfully attempts to make available to the reader the experience of a group of teachers at New York University Post-Graduate Medical School who have been primarily interested the last several years in teaching clinical auscultation of the heart. Outstanding in their approach is the utilization of the Educational Cardioscope (oscilloscope) which makes possible the simultaneous delivery of the visual pattern of heart sounds and murmurs to the eye, while the student receives the auditory impression through the ear.

With over 50 illustrations (the majority being stethograms) the authors outline the physical principles of sound, explain the origin of heart sounds, describe the modification of heart sounds and variations of heart sounds in health and disease, define and classify heart murmurs, discuss the disorders of heart rhythm and finally state the etiologic factors and auscultatory findings in each of the chief clinical entities recognized as occurring in the heart.

In the foreward contributed by Charles A. Poindexter, M.D., he points out that teaching cardiac auscultation has always been difficult, first because of "the almost intolerable boredom of the student and instructor while waiting for others to listen," second, because of "the reluctance of students to time sounds and murmurs." The use of the audio-visual devices described in this text contributes greatly to minimizing both of these fundamental difficulties.

This text and the Educational Cardioscope upon which so much of the text is based, have already proved their usefulness as effective tools in teaching clinical auscultation of the heart in many of our medical schools and can be safely recommended for consideration in all.

D. F. Smiley, AAMC



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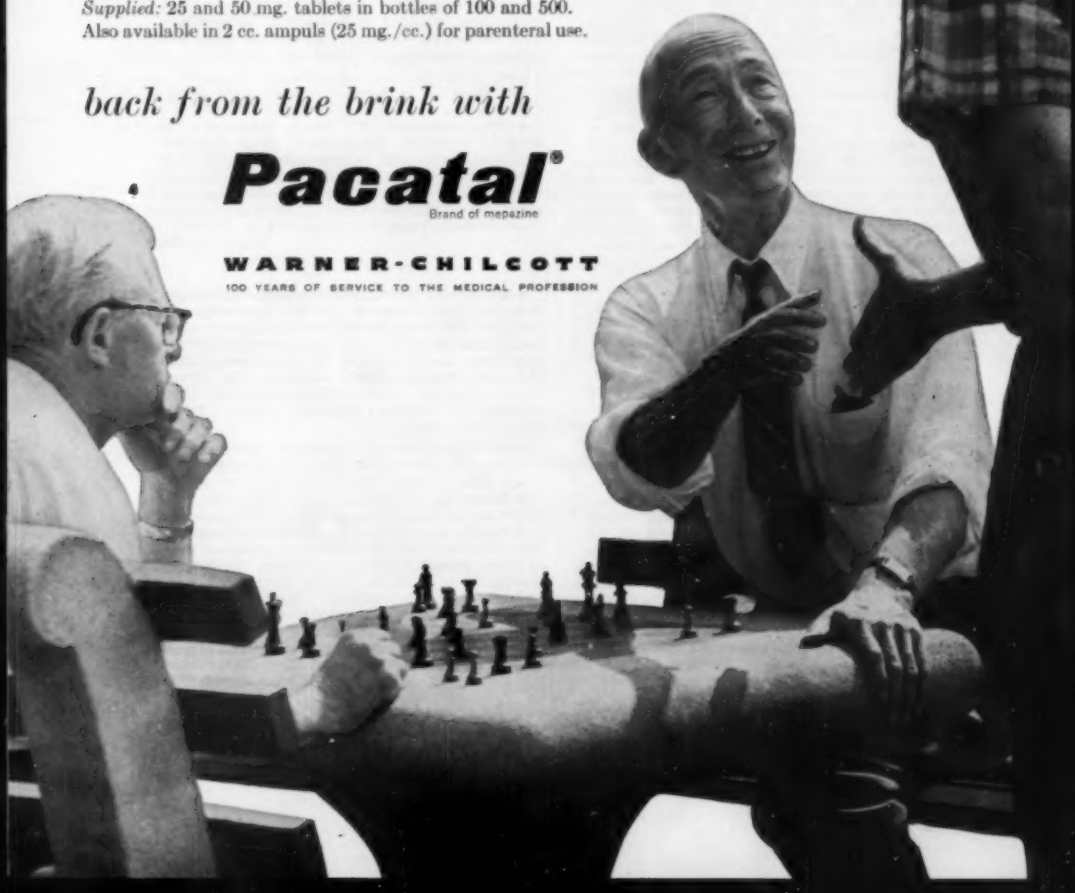

The Personnel Exchange

Faculty Vacancies

PROFESSOR OF ANATOMY * IRAN

Professor of anatomy and head of department: Medical College of Shiraz, Iran. Will have two assistants and necessary staff. Contract basis for 2-4 years. $5600 will be sent to home address in 12 months. A monthly salary of 25,000 rials will be paid (enough for himself and family to live comfortably in Shiraz) Insurance policy. Copy of contract available for those interested. Position should be filled by October 1957. Address: Dr. Zabih Ghorban, Chancellor of the University and Dean of the Medical Faculty, Shiraz, Iran.

• PEDIATRICS: Full time clinical teacher for department with active student and house staff educational program. Person interested in clinical teaching as a career desired. Considerable small group teaching with less emphasis on lectures. Rank and salary dependent on qualifications. Address: V-58.

• BACTERIOLOGISTS: Openings for an assistant professor and an associate professor of bacteriology at a commencing salary of $6500 to $8500, depending on qualifications, with regular increments. Duties to include teaching, hospital and/or public health bacteriology and a program of research. Applications should include a curriculum vitae, a recent photograph and the names of three referees and should be sent to: Dean of Medicine, University of Alberta, Edmonton, Alberta, Canada.

• ASSISTANT PATHOLOGIST: To Dr. David R. Meranze, board certified or eligible; major general hospital; medical school affiliated; active teaching and research institution; highly qualified staff. Write to Albert Einstein Medical Center, Southern Division, Fifth and Reed Sts., Philadelphia 47, Pa.

• TRAINEE IN CARDIAC CATHETERIZATION TECHNIQUES: A position for a postgraduate trainee is available in the Cardiac Catheterization Unit. Stipend—$3800 per year plus allowance for dependents. This laboratory is conducting research in conjunction with members of the department of surgery on extracorporeal circulation (pump-oxygenators) for use in cardiovascular surgery as well as other potential uses. It is also concerned in the study of vascular dynamics in various types of hypertension both in humans and in animals. Will provide generous experience in technique, procedures and application of cardiac catheterization. (State qualifications and outline curriculum vitae with first letter). Address: Dr. Raymond Gregory, Cardiac Catheterization Unit, University of Texas Medical Branch, Galveston, Texas.

• PSYCHIATRIST: Applications are being reviewed for Board Certified or qualified psychiatrist for university appointment involving medical student instruction and direction of Mental Health Clinic. Address: V-59.

• APPROVED RESIDENCY IN PHYSICAL MEDICINE—Three-year approved program in 1,110-bed general hospital, affiliated with Baylor College of Medicine. Excellent facilities, opportunities for research. Regular residency at stipend $2,840-$3,550; career residency, $5,915-$8,990. Write Manager, VA Hospital, Houston, Texas.

• RESEARCH AND CLINICAL ASSISTANT: Full-time. Boston, Mass. Qualified physicians interested in reproductive physiology. Training positions available in clinic concerned with infertility, medical and surgical gynecology, and obstetrics. Given biographical data and salary requirements. Address: V-60.

• MICROBIOLOGIST: To head laboratory in surgical research department. Dual appointment—surgery and microbiology. Rank and salary depend on qualifications. Experience with clostridial toxins needed. Address: Department of Surgery, L.S.U. School of Medicine, New Orleans, Louisiana.

• CLINICAL PSYCHOLOGIST: appointment on the full-time faculty of a research and dynamically oriented Psychiatry Department, for a recent Ph.D. with an approved internship and some training or experience with children. Salary $6400. Address: Dr. S. J. Fields, Senior Clinical Psychologist, University of Arkansas Medical Center, Little Rock, Arkansas.

• PRINCIPAL SCIENTIST: For the research program of newly established Radioisotope Laboratory in 500 bed V. A. GM&S Hospital; full time teaching and research position with Medical School Staff appointment. Candidates should have a Ph.D. degree in physics, biophysics, or biochemistry. Opportunity for independent research. Salary range $7465-$8645, depending on qualifications and experience. Address: Chief, Radioisotope Service, V. A. Hospital, Little Rock, Arkansas.

To aid in solution of the problem of faculty vacancies, MEDICAL EDUCATION will list persons and positions available, as a free service. The school department or person may have the option of being identified in these columns or of being assigned a key number for each position listed. Mail addressed to key numbers will be forwarded to the person or department listing the request.

Information for these columns should reach the Personnel Exchange, Journal of Medical Education, 2530 Ridge Avenue, Evanston, Illinois, not later than the 10th of the month which precedes the month in which the listings will appear.

Personnel Available

• INTERNIST-FULL TIME CLINICAL TEACHER: 32. family; Exper: many phases teaching program with medical school, also private and county hospital. Special training in rheumatology, psychiatry and research. Leaving military service in June 1957. Desire opportunity to develop and direct medical education in private hospital, or continue prev. academic career. Address: A-268.

• ZOOLOGIST: Ph.D., 1954. General Biology, General Zoology, Embryology, Physiology, Onocology. Desires teaching and research position in basic science school or medical school for 1957. Address: Department of Biology, Brown University, Providence 12, Rhode Island.

• MICROBIOLOGIST, Ph.D., strong background in bacterial physiology, biochemistry, and medical bacteriology; interested in academic or full-time research post. Address: A-270.

• CHEMIST-PHYSIOLOGIST: Ph.D. in Org. Chemistry, recent M.S. in Physiology. Extensive experience in industrial pharmaceutical research. Publications, Patents. Desire position in medical research in academic institution. Address: A-271.

• SURGEON: Several years of cancer surgery. Original clinical research work. Societies. Publications. Languages. Board eligible. Presently holding senior staff position. Desired is preferably a full-time position allowing clinical activities and clinical research. Address: A-272.

• DIPLOMATE AMERICAN BOARD OF SURGERY-F.A.C.S. pending, age 32. Additional 1½ years training in cardiovascular surgery and research. Teaching experience at under-graduate and post-graduate levels in cardiovascular and general surgery. Publications. Desires research and teaching position. Available immediately. Address: A-273.

• PHARMACOLOGIST: M.D., Ph.D. (in pharmacology); 3 years teaching in a medical school and 7 years pharmacological research experience. Desires teaching and/or research position. Address: A-274.

• ANATOMIST: M.D., Ph.D. Presently Associate Professor but desires change of locale. Teaching experience in microscopic anatomy; research is histo and cytochemistry. Publications. Desires teaching-research or full time research position in medical center in upper mid-west or far west. Address: A-276.

• PHYSICIAN-BIOCHEMIST: Training in internal medicine, engaged for past seven years in research in experimental diabetes and studies of insulin action. Now completing work for degree of Ph.D. in biochemistry. Desires appointment in department of biochemistry, physiology, medicine, or research medicine. Available January, 1958 at completion of present fellowship. Address: A-279.

• OBSTETRICIAN-GYNECOLOGIST: Aged 34, 8 years specialty training, Member of Royal College of Obstetricians and Gynacologists, wishes to emigrate to U.S. At present civilian consultant to U.S. Air Force in U.K. Interested in academic post where state licensure not immediately required. Four publications. Address: A-280.

• INTERNIST, BOARD ELIGIBLE: charity and university internship and residencies—D.N.B. —married—desires career academic position on medical school faculty—any phase of teaching, administration, research or admitting room supervision. Address: A-281.

• PHYSIOLOGIST: Ph.D., male, 35, married. Desires opportunity for research with or without teaching. Six years research experience in circulatory physiology. Teaching experience in medical and graduate physiology. Available September, 1957. Address A-282.

• PHYSIOLOGIST-ENDOCRINOLOGIST: Mature, male, Chicago Ph.D. Wide teaching, research, and research directing experience in Human, General, Endocrine, and Behavioral Physiology. Publications. Societies. Desires graduate or medical teaching position with ample time and facilities for research. Will attend Federation meetings. Address: A-283.

• MICROBIOLOGIST: M.S., University; Ph.D., Medical Sciences, Summer, 1957; 30, male, married. Three years teaching assistant in medical school course in microbiology. Four years research experience. Graduate studies include basic science course, except pharmacology, in first two years of medical school. Desires academic position with opportunity for research. Address: A-284.

• MEDICAL LIBRARIAN: M.A., M.S., male, 38, married. Now completing third year as head of library serving medical and dental schools and affiliated hospitals. Have reorganized procedures, hired and trained a staff to do the library's work. Now seek more responsible post in larger library. Address: A-285.

• MICROBIOLOGIST: Ph.D. background in medical microbiology, bacterial physiology, biochemistry, cytology, and drug effects. Four years' academic and industrial research experience. Desires teaching and/or research. Address: A-286.

• PHYSIOLOGIST: Ph.D. Currently teaching and research in college of veterinary medicine (5 years); past experience in zoology-physiology in liberal arts college (5 years); radiobiological experience — summer 1956; publications; desire academic or responsible research position. West or midwest preferred, but other locations considered. Present rank, assistant professor. Address: A-287.

• MICROBIOLOGIST: Ph.D., age 35, seven years medical school teaching experience. Desires teaching and research position. Main interests are in nutrition, metabolism, genetics, and the mode of action of chemotherapeutic agents. Address: A-288.

• INTERNIST: Age 40, certified by the American Board in Internal Medicine 1950. Rank, assistant professor of medicine in eastern medical school. Interested in metabolism and renal disease, but has broad training including most sub-specialties. Written and has had published about 30 manuscripts. Desirous of heading own section and instituting some organized clinical investigation, as well as clinical teaching. Address: A-289.

• SURGEON: An experienced British surgeon wishes a senior academic post. Undergraduate multi-prizeman and scholar in medical subjects. Qualifications: M.B., B.S., Honors. Durham, 1939; F.R.C.S. Edinburgh 194[illegible]. M.S. Durham, 1944; F.I.C.S. 1956. Experience: War service, surgical specialist, Royal Air Force. A senior general surgeon with senior academic career. Many practical research papers published. Address: A-290.

• SURGEON: M.D., Ph.D. Presently associate professor, large metropolitan medical school Member of leading societies. Numerous publications. Desires geographical full-time position in medical school located in less populated area with opportunities for experimental and clinical research and teaching. Address: A-291.

• MEDICAL BACTERIOLOGIST-Ph.D., excellent background of responsible research, teaching, diagnostic bacteriology and administrative experience in colleges, universities and hospitals. Desires position in teaching and/or research in medical school, as Bacteriologist-in-Charge of research in some area of medical bacteriology, preferably TB, or related position with opportunity for some independent research. Address: A-292.

• PHYSIOLOGIST: Ph.D., 38, interested in medical teaching and research. More than forty publications in protein metabolism, enzymology, respiration, endocrinology. Eleven years experience in teaching and research. Capable administrator, many graduate students, large grants. At present Associate Professor, $9000. No chance for advancement in present position. Location immaterial. Address: A-293.

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Admission Requirements of American Medical Colleges—1956 ($2.00).
Fellowships, Funds and Prizes Available for Graduate Medical Work in the United States and Canada—4th Edition published 1954. ($1.50).
By-laws of the Association of American Medical Colleges (Revised 1955).
Minutes of Proceedings of the Annual Meetings (1947-1956 Minutes now available).
Public Understanding and Support of Medical Education.

Journal of Medical Education

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- The Teaching of Pathology, Microbiology, Immunology and Genetics (Report of the 1954 Teaching Institute)—$2.00, paperbound; $3.00, clothbound.
- Education of Physicians for Industry ($2.00).
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- Support of Research by American Cancer Society ($1.00).
- The Teaching of Anatomy and Anthropology in Medical Education (Report of the 1955 Teaching Institute)—$2.00 paperbound; $3.00 clothbound.
- Survey of Women Physicians Graduating from Medical School 1925-1940 (.50).

Medical Audio-Visual Institute Publications

Film Catalog, Fall 1955 and Supplement
Reprints from the Audiovisual News Section of the Journal of MEDICAL EDUCATION
Films in Psychiatry, Psychology and Mental Health (available from the Health Education Council, 10 Downing St., New York 14, $6.00).
Films in the Cardiovascular Diseases (Part I available from the American Health Association, 44 E. 23rd St., New York 10, $2.00. Part II available from the Medical A-V Institute, $2.00).
Films published by the MAVI are included in the Film Catalog.

Publications of Related Organizations

Suggestions for Supplementing the Medical Curriculum in Time of National Emergency (Joint Committee on Medical Education).
Hospitals Participating in the Matching Program 1957 (NIMP publication).
Results of the Matching Program 1957 (NIMP publication).
The Student and the Matching Program 1957 (NIMP publication).
Medical College Admission Test—Bulletin of Information 1956 (Educational Testing Service publication).

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